WEBER STATE UNIVERSITY

SWENSON GYMNASIUM MASTER PLAN

DFCM NO. 02278810 / WSU NO. SG-02169

HFS Architects

Division of Facilities
Construction & Management

February 7, 2003

APPROVALS

WEBER STATE UNIVERSITY

We have reviewed the program and warrant that it adequately represents our request for a facility to fulfill part of our mission and programmatic needs. All appropriate parties at the Institution have reviewed it for completeness and accuracy.

Ann Millner — Date
President

Norm Tarbox — Date
Vice President, Administrative Affairs

STATE DIVISION OF FACILITIES CONSTRUCTION & MANAGEMENT

We have reviewed the Program, jointly prepared with the Institution, for completeness and accuracy. These signatures do not necessarily represent an endorsement for the need of the requested space at this time.

Blake Court — Date
Program Director

WEBER STATE UNIVERSITY

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David Eisler, Provost
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EXECUTIVE SUMMARY

PROJECT DEFINITION

While we will address this request as a single project, the State funds and donations will generally be used as follows:

- The State funds will be used to correct many deficiencies identified in a Building Condition Assessment obtained by the Division of Facilities Construction and Management. Besides connecting the building to the central chilled water system, the following systems do not meet code and would be upgraded:
  - Electrical system.
  - Heating and ventilation system.
  - Structural system.
- The donation will fund many enhancements to the functionality of the building including:
  - Upgrade and the expansion of the locker rooms.
  - Development of usable space in the basketball court balconies.
  - Redefined and upgraded use for the old racquetball courts.

Although they will construct no additional space, the University is requesting an adjustment to its operations and maintenance budget for this facility. This will bring the funding level up to current requirements.

PROJECT NEED

The existing facility was constructed in 1962 and has never been renovated. The building's systems are worn out, inadequate and out of code. The building has numerous life safety and other code violations.

- The electrical system is worn out and undersized.
- The ventilation system would spread smoke instead of controlling it.
- The building would suffer significant damage in a seismic event.
- Accessibility for the disabled is poor with some areas not accessible at all.

Only 5% of the building is currently air conditioned. The project would provide air conditioning for the entire building. This combined with the functional enhancements will significantly increase the utilization of the facility.

The project will significantly improve the energy efficiency of the existing systems in the building. As well as, improving and enhancing the functionality and utilization of the building.

PROJECT SUMMARY

Project Area

- Space Type: Existing Educational Facility
- Assignable Area: 63,495 sf
- Total Area: 96,341 sf
- Efficiency: 65.9%

Project Schedule

- Cost Date: January 2003
- Anticipated Begin Design April 2003
- Anticipated Bid Date: September 2003
- Anticipated Construction Completion: March 2005
- Anticipated Occupancy Date: June 2005

Anticipated Project Costs

- Total Construction Cost: $6,808,555

ARCHITECTURAL SUMMARY

The Swenson Gymnasium is a two-story building with basement and sub-basement levels. The brick and concrete building, constructed of wood and steel framing, supports several activities. Each floor is designed to support sport and recreational activities ranging from archery and basketball to volleyball and yoga. This 96,341 gross square foot building was originally constructed in 1962. Since then, no major renovations have taken place. This facility is connected to the new Health and Physical Education Center Building to the west.

Exterior Structure[1]

The existing windows are a mixture of original, aluminum frame windows and steel frame units. In either case, the windows are original and timeworn. Some glass is cracked, and the steel is rusting. These window units need to be upgraded with new thermal pane, aluminum frame, retrofit windows. Consideration should be given to reducing glazing in the northern face of the building to improve energy efficiency.

The exterior service doors of this building are damaged and aged. New flush, hollow metal, exterior grade personnel doors are needed. The weather protection of the main entrance has failed. It is recommended that the storefront for the main entrance be replaced with a new storefront. Also, replace the aging overhead doors in the dance studio with manual overhead door assemblies with chain hoists.

FIRE / LIFE SAFETY[1]

No fire suppression system exists in this building. Although the occupied basement and sub-basement areas are required by modern codes to be protected by automatic fire suppression, the building is grand fathered under current requirements. Major renovation work is necessary in this facility, which will likely eliminate the validity of this exclusion. In addition, the remainder of the facility would ideally be covered by a sprinkling system. To improve overall user safety in this facility, the installation of a building-wide fire suppression system is recommended. A wet-pipe fire sprinkler system is anticipated to be the appropriate design for the structure.

The fire alarm system in this facility does not comply with ADA legislation. The present application provides coverage for some smoke detectors and the pull stations. Visual alarms are not installed according to modern standards. The application of full fire suppression is being advised for this facility, which will increase the monitoring duty of the fire alarm / detection system. In addition, an HVAC system redesign is also being recommended. Therefore, it is recommended a digitally addressable system is installed. The fire alarm should include smoke and heat detectors, manual pulls, visual / audible signals, air handler interface, fire door interface, fire damper interface, and remote monitoring.

The exit signs, of various styles are in average condition. The signs are incandescent-types, which are not very energy-efficient and are maintenance intensive due to more frequent lamp burnout. New LED exit signs are recommended to simplify maintenance and lower energy costs. The signs should be powered by the shared emergency power circuitry off the generator.

[1] Excerpts taken from the "Facility Condition Analysis" by the ISES Corporation, April 2001.

MECHANICAL SUMMARY

HVAC[2]

The campus distribution network supplies steam for hydronic media heating and for domestic water heating. Steam is piped through a pressure reduction station that feeds a shell-and-tube heat exchanger in mechanical room 66. The total redesign and restoration of this system is advised.

The HVAC system in this building is original and only heats and ventilates most of the space. Only a small segment of front office area has air conditioning, which was installed in 1990 as a part of the PE building enhancement. Present facilities of this type are typically heated and cooled. Work should be coordinated with the electrical upgrades. The application of a fully deployed Metasys building automation system is also advised. The hydronic media pumps, heat exchangers, exhaust, and accessory subsystems should be totally replaced in this upgrade.

The present control system is a pneumatic / DDC hybrid Johnson Controls DS 8500 design. This system has mostly original style pneumatic surface actuation and valve modulation. The existing control compressor has had one drive motor and one compressor recently replaced. The tank, air dryer, and other compressor are timeworn. It is assumed that the future control upgrade associated with the recommended general HVAC replacement will be a DDC / pneumatic hybrid type of design. Therefore, the upgrade of the HVAC system should be accompanied by the replacement of the control air source, including the compressor system and refrigerated air dryer.

A considerable amount of deteriorated steam, condensate, and hot water pipe insulation exists in the main mechanical room. It is recommended this is replaced for better system performance. In addition, pipe fitting leaks and hand valve packing leaks should be repaired. Once all leaks are repaired, the steam and hot water piping within the mechanical room should be insulated and color-coded with protective outer jackets. Presently, the lateral bracing is substandard and it is recommended that this be improved to bring the piping attachments and supports up to modern seismic bracing standards.

Plumbing[2]

The building is fed domestic water from the campus distribution network. Backflow protection is in place, as required by code, on the supply piping system. An additional service will be necessary in support of the fire suppression upgrade recommended previously.

The water supply distribution network is made up of threaded, galvanized steel piping and fittings. The drain system consists of cast-iron, hub and spigot piping. The piping is visibly corroded and in very poor condition. The tap water is visibly rust stained, and many areas of a pipe bandage are present. The leaking drains have also damaged a significant amount of the interior finish. Installation of a new copper piping network is recommended. It should also include isolation valves at the appropriate locations and be insulated. Seismic restraining devices should also be installed as required.

In the restrooms and locker rooms, the porcelain china segments of the water closets, urinals, and lavatories are in poor condition and need to be replaced. The chrome-plated flush valves, lavatory faucets, shower valves, showerheads, and chrome-plated supply and drain connections are corroded or visibly aged. A universal replacement of the chrome fixture components and all porcelain china water fixtures is recommended. Automatic flush valves and lavatory valves are recommended in the restrooms and locker areas.

Domestic hot water is produced in this facility by a shell-and-tubed heat exchanger with steam power. It is accumulated and held in a replacement hot water storage tank. The exact age of the tank could not be determined, but its condition implies that it will continue to be acceptable.

[2]Excerpts taken from the "Facility Condition Analysis" by the ISES Corporation, April 2001.

ELECTRICAL SUMMARY

Existing Power System

The existing electrical system is fed from the campus medium voltage distribution system. The incoming service enters the building via a tunnel system to the basement boiler room. The medium voltage cable is in a conduit. A transformer vault is in the boiler room. The system is fed from an oil switch that is obsolete and dangerous to operate. There are three single phase oil filled 100 kVA transformers connected to form a 4160 V delta primary and a 120/208V wye secondary system. The arrangement of the transformers does not allow proper access and clearance. The vault needs to be expanded. The medium voltage cables feeding the building are now more than 40 years old and are at the end of their life and should be replaced.

The existing main panel for the secondary system, an 800 A 120/208 V 3-phase 4-wire, is in good shape but is old and obsolete. The secondary panels are obsolete and do not meet current standards for fault current rating. Most of the branch wiring is not grounded. The existing electrical system only provides a power density of 3.5 VA/sf that is grossly undersized. The entire existing electrical system needs to be replaced. The only part of the existing electrical system that could be salvaged is part of the conduit. However, since most of the masonry walls will be replaced, the likelihood that much of the conduit could be salvaged is slim.

Panel E is currently not fed from the generator. A new generator is serving the connecting building on the west side of the Swenson Gym. The transfer switches for the generator are in the basement and accessed from the Swenson Gym boiler room. The generator serves minimal loads in the Swenson Gym. A load study must be done to see if the generator can support additional life safety functions and other emergency loads such as file servers in the Swenson Gym.

Existing Lighting

Most of the existing lighting is fluorescent but the fixtures have inefficient T-12 lamps and magnetic ballasts. The main gym has metal halide fixtures. The fixtures, while energy efficient, have different lamp colors, are of different types, and are not up to current standards for academic use and physical activity. The gyms lighting also a problem in that metal halide lamps take up to 20 minutes to come to full brightness and take around five minutes to restart if power is momentarily interrupted. Some closets, mechanical spaces, etc. have incandescent lighting. The exterior lighting along the walkway on the west side of the building is new and will be modified only to fit building egress reconfiguration. There are also a few fixtures surface-mounted to the building exterior under eaves on the west side at the south end and on the east end. There are also a few surface-mounted fixtures on the corners of the buildings and in a few key locations. The exterior fixtures are all obsolete and should be replaced with more energy efficient fixtures. The exterior fixtures should also be chosen for aesthetics since they are surface-mount and will become part of the look of the building. All of the interior lighting must be replaced as well to meet the energy code. No automatic lighting control or occupancy sensors are currently being used.

Existing Fire Alarm

The existing fire alarm system was upgraded about four years ago. The system is a Notifier addressable system with analog self adjusting smoke detectors. Many fire alarm horn/strobes, pull stations, etc. are surface-mounted and fed from a surface conduit or surface raceway (Wiremold). The system can be reused but most of the smoke detectors, horn/strobes, etc. will be relocated and some new devices will be added for the reconfigured spaces. The building will be sprinkled as part of the upgrade so new flow and tamper switches will be added. Also, new duct detectors and other devices will be added for the new mechanical equipment.

Existing Auxiliary Systems

The incoming phone service comes into the southeast corner of the boiler room from the west via a 1-1/2" conduit. This conduit is undersized. The existing voice and data systems are insufficient and would not meet current standards. Most of the voice and data cabling will also be removed when the existing walls are removed. New data closets will be provided and the main telephone board should be moved to a location that is easier to reach and is clean.

The existing campus wide clock system is Simplex. The clock system will be extended to the remodeled building. Care should be taken to make sure the signal strength to the building is sufficient for the new clocks to operate correctly.

There is no paging system in the building.

Currently several cameras are covering interior corridors. A security system sounds an audible alarm if someone exits an uncontrolled door.

ACCESSIBILITY[3]

The interior doors to the offices, storage and supply rooms are knob actuated. To make the accessible routes fully accessible to visitors who have difficulty grasping objects, the application of lever actuated door hardware is proposed. It is recommended that lever actuated handles be installed on all doors that currently have knob hardware.

The current interior and exterior stairs have noncompliant handrails and low guardrails. Installation of additional painted metal hand railing on both sides of the stair flights, and attachment of a top rail to raise the height of the stair guardrails to forty-two inches must be done to meet current building code requirements. Around the exterior of the building, barriers should be constructed at the underside of intermediate walkways to meet current requirements for the visually impaired.

Present ADA legislation regarding building accessibility by the physically disabled requires that if drinking fountains are provided, half these fountains, but at least one, be designed for use by those in wheelchairs and persons who have trouble stooping. The drinking fountains on every level of this gym are single level units. To comply with the intent of this legislation, it is recommended that half the existing drinking fountains be replaced with dual level, refrigerated units.

The restrooms in this facility have been modified from the original construction to gain compliance with some ADA standards. To continue this effort, more modifications need to be made to meet the needs of the physically challenged. The mirrors and lavatories are in good condition, but one of each in the mens and womens restrooms must be upgraded to meet ADA requirements.

[3] Excerpts taken from the "Facility Condition Analysis" by the ISES Corporation, April 2001.

INTERIOR / FINISH SYSTEMS[4]

There are painted walls throughout this facility. The interior finishes are in poor condition and it is recommended that all previously painted surfaces be repainted. Minor repairs should be completed before the painting begins.

The ceilings vary in design and material, from space to space, and floor to floor. There are some small and some big grid systems. Many ceiling tiles, despite size or design, are dirty and stained. Roof leaks and similar problems have damaged many ceiling tiles. In addition, none of the ceilings appear to be properly seismically braced. Therefore, a complete ceiling system replacement and redesign are recommended. The ceiling work should compliment the recommended mechanical and fire safety upgrades. The new ceilings must also meet current seismic code requirements.

Much of the interior space had been finished with vinyl floor tile. In some instances, the VCT has been covered with carpet. The floor finishes under the carpet and in the restrooms is suspected to be a vinyl asbestos tile. The floor tiles and mastic have been tested and the presence of asbestos has been confirmed. All confirmed asbestos containing materials should be handled according to industry standards for such materials before the start of construction.

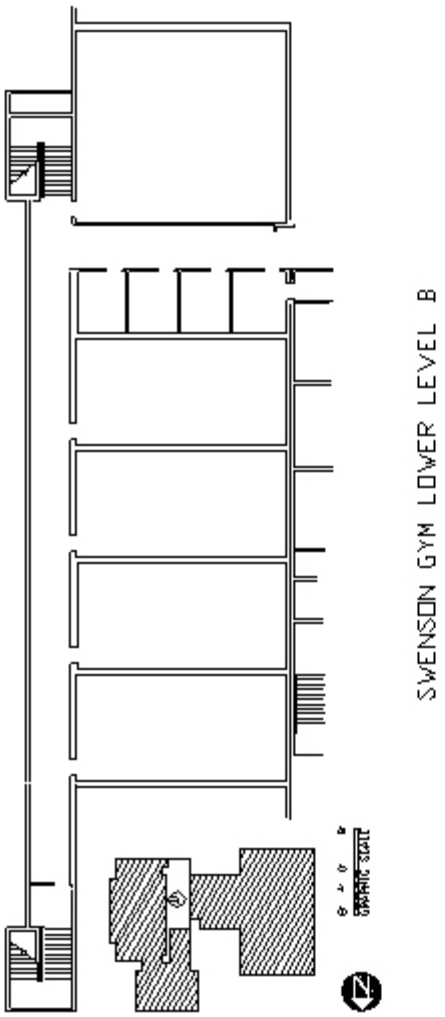
There is carpet in approximately one-quarter of this facility. The carpet in the classrooms, conference rooms, and some offices is visibly worn. Experience has shown that carpeting installations in facilities that have similar traffic patterns reach the end of their useful service lives in about seven to ten years. A universal carpet replacement in this facility is advised.

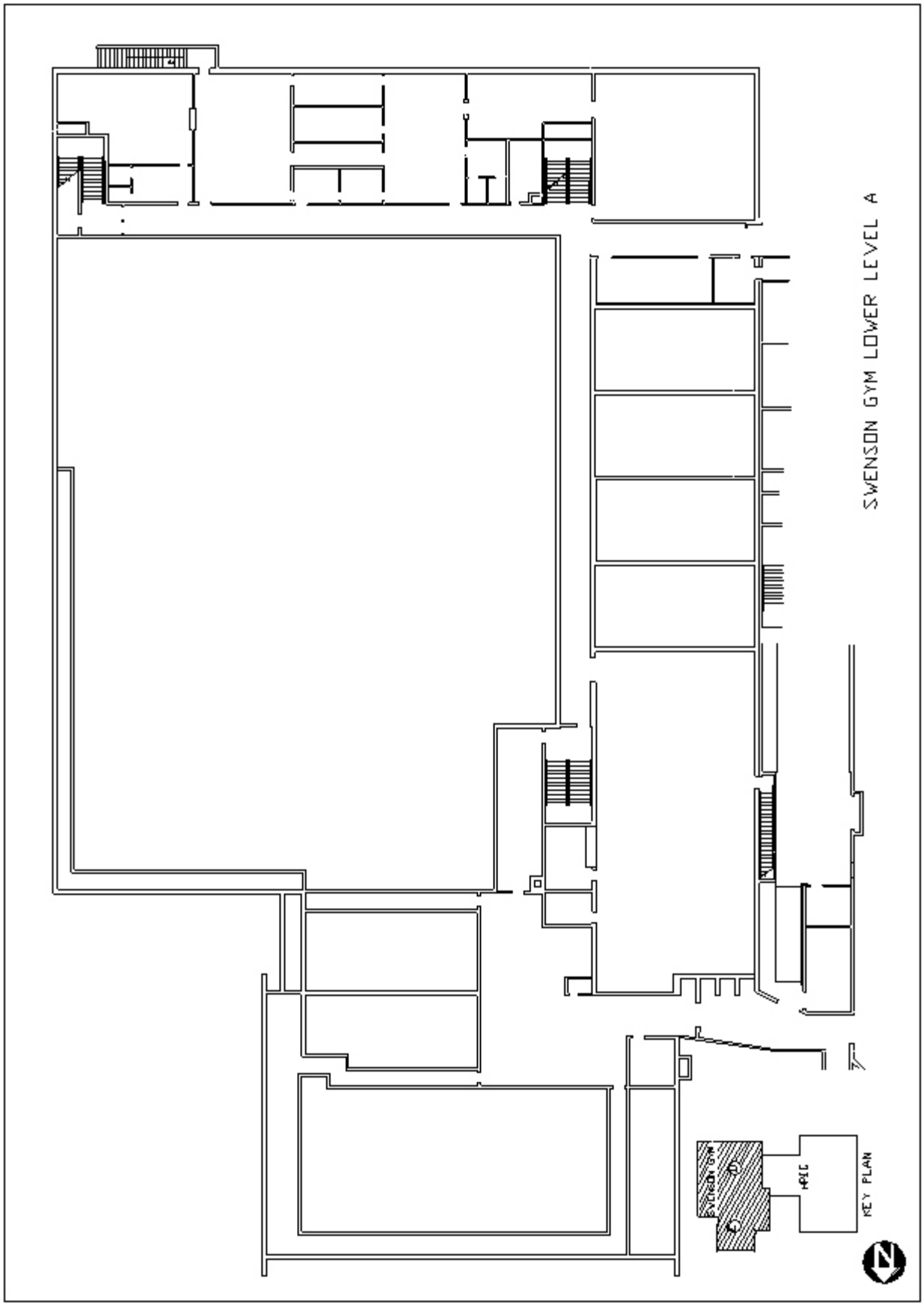
[4] Excerpts taken from the "Facility Condition Analysis" by the ISES Corporation, April 2001.

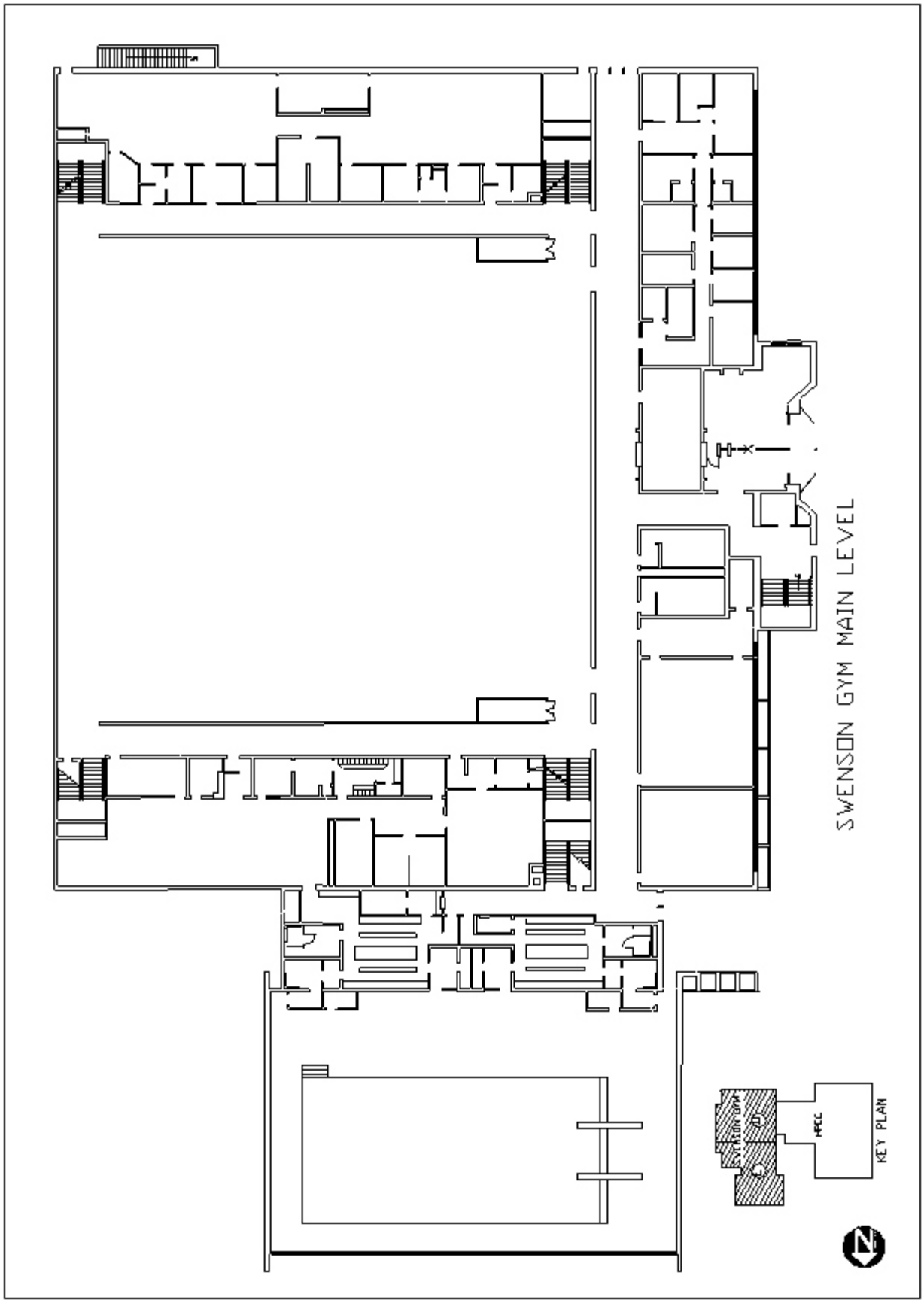
ARCHITECTURAL PLANNING

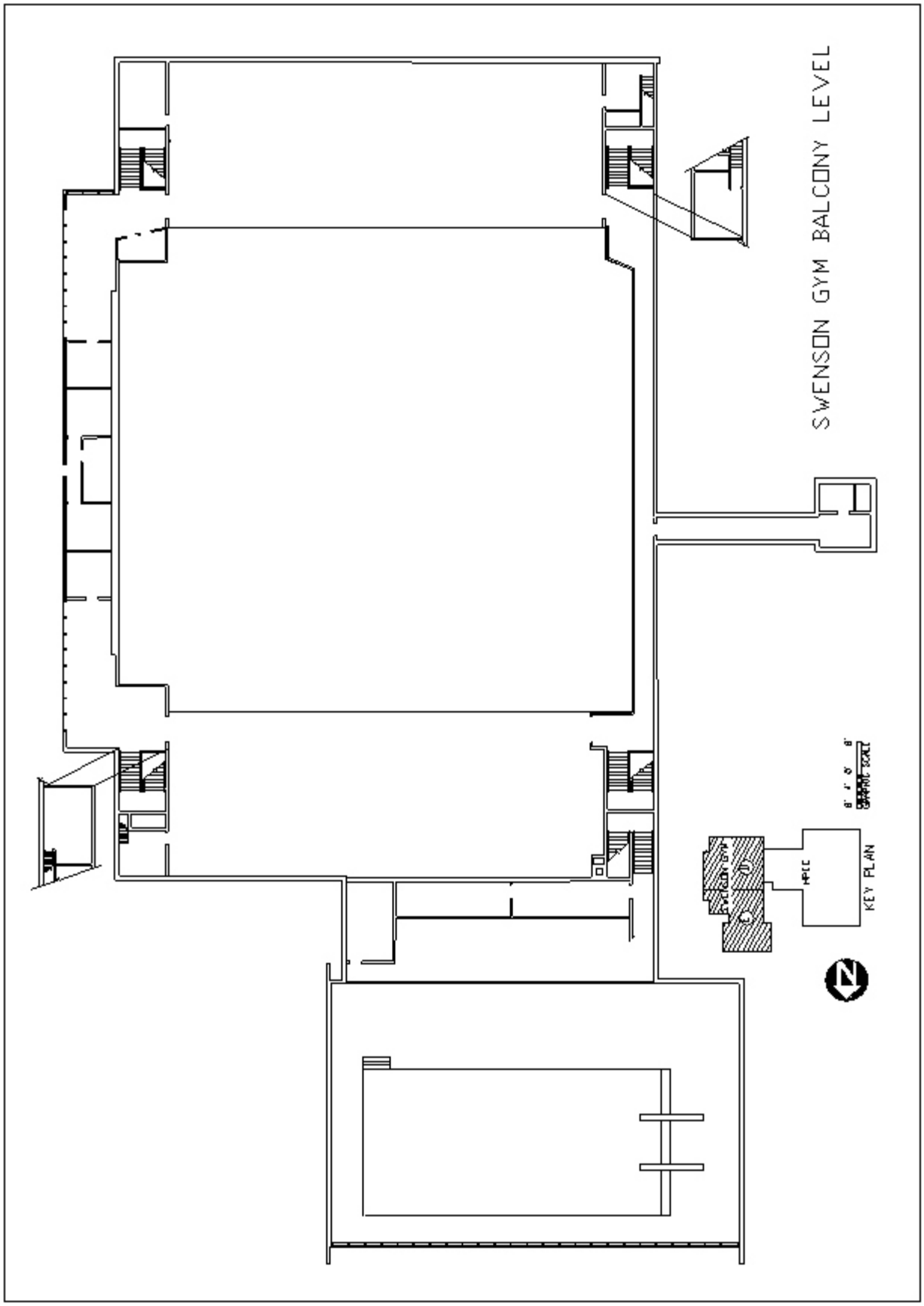
Internal Circulation

The following drawings show the building in its original configuration. Internal circulation is driven by the basic layout and relationship between the gymnasium and the locker rooms.


SWENSON GYM LOWER LEVEL B

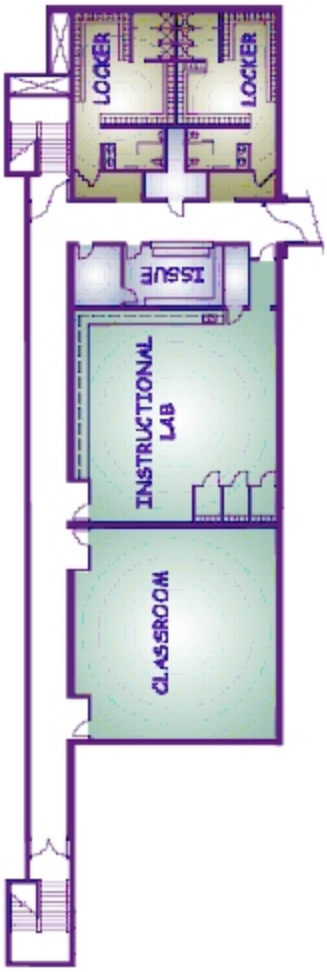

SWENSON GYM LOWER LEVEL A
KEY PLAN

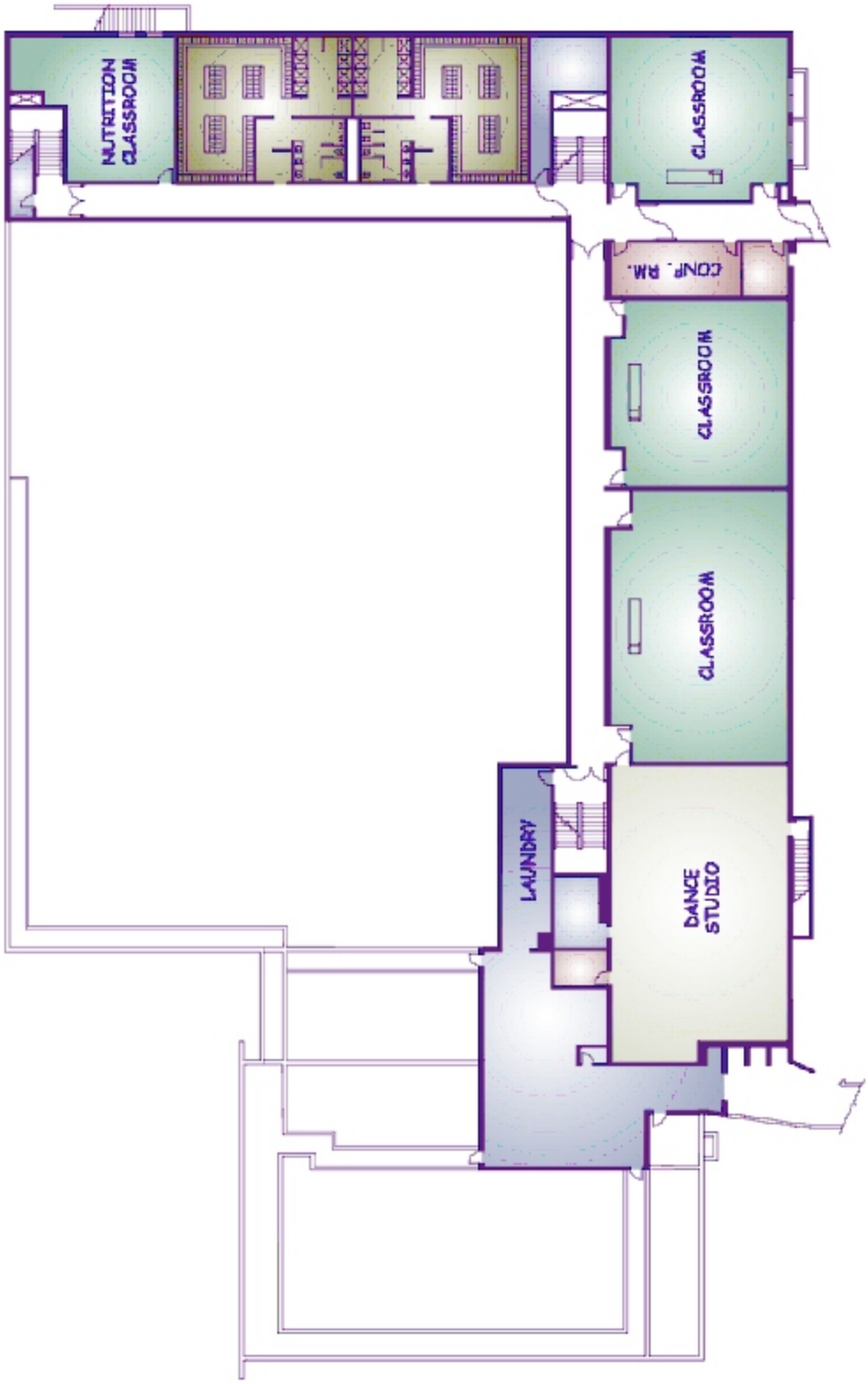

SWENSON GYM MAIN LEVEL
KEY PLAN
HFCC
N

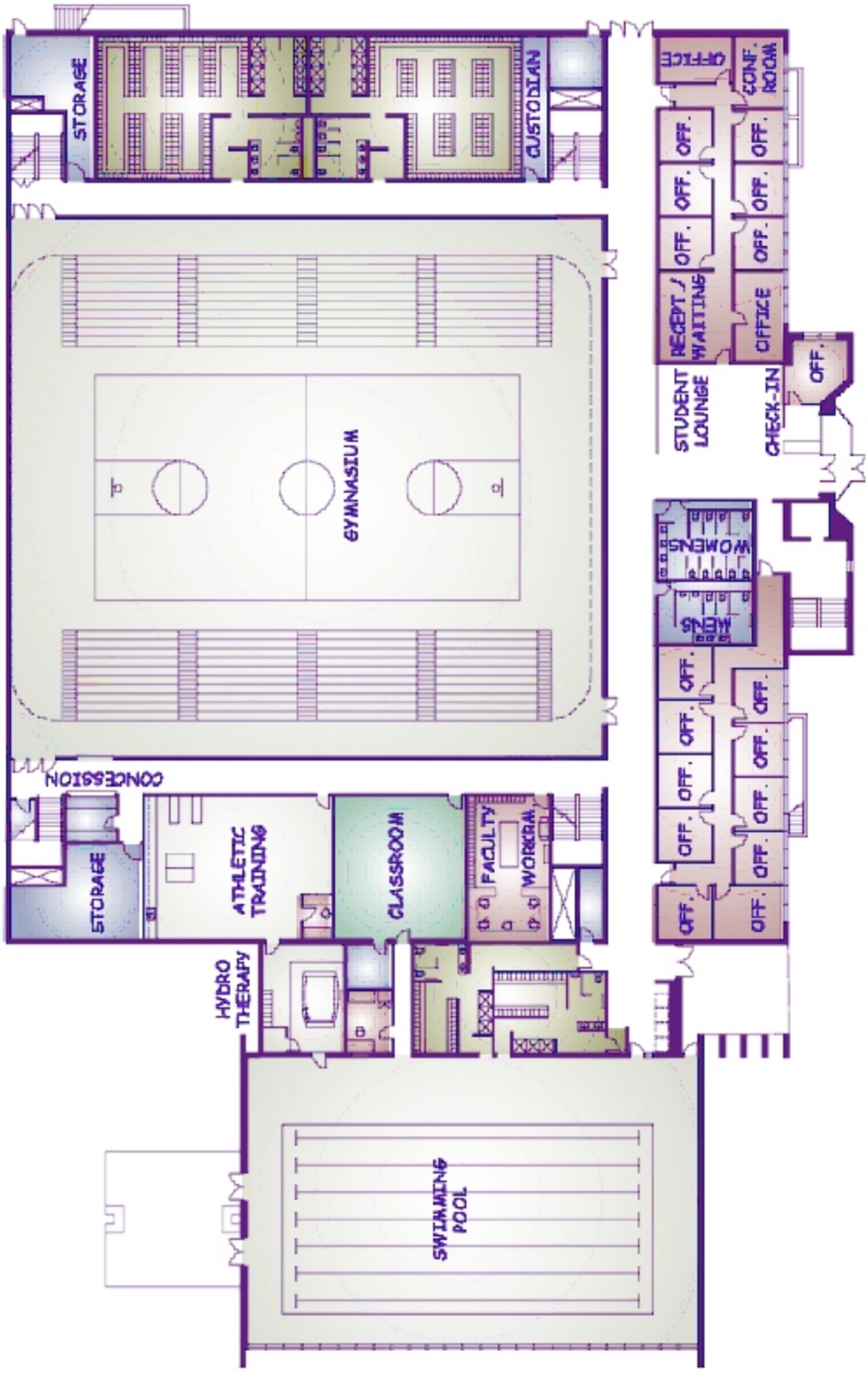

SWENSON GYM BALCONY LEVEL
KEY PLAN

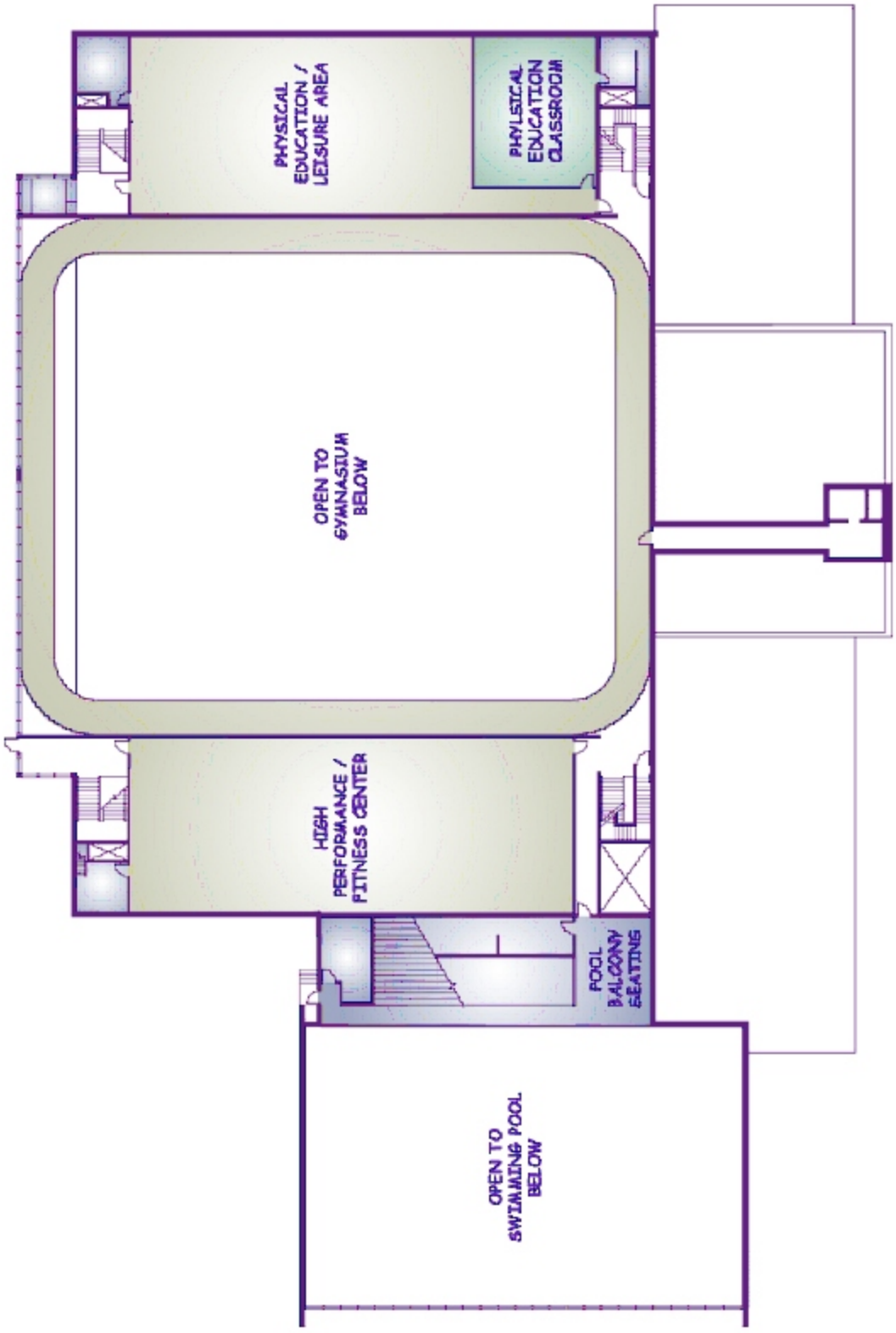
Floor Plan Analysis

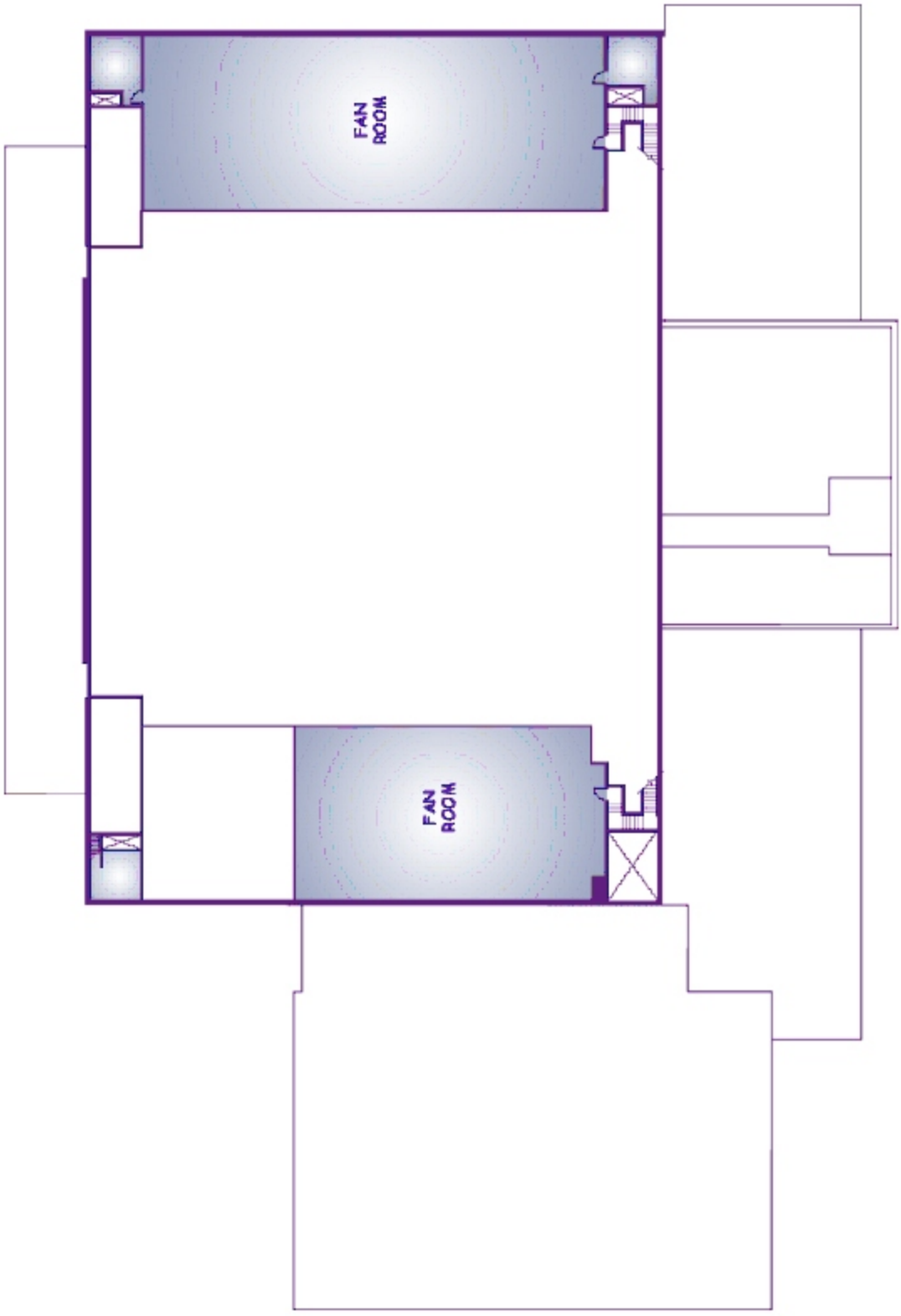
The following drawing represent the possible reconfiguration of the building after the building systems are upgraded.


LOCKER
LOCKER
ISSUE
INSTRUCTIONAL LAB
CLASSROOM


NUTRITION CLASSROOM
CLASSROOM
CONF. RM.
CLASSROOM
CLASSROOM
LAUNDRY
DANCE STUDIO


STORAGE
CUSTODIAN
OFFICE
CONF. ROOM
OFF.
RECEPT./ WAITING
STUDENT LOUNGE
CHECK-IN
GYMNASIUM
WOMENS
MENS
CONCESSION
STORAGE
ATHLETIC TRAINING
CLASSROOM
FACULTY WORKRM.
HYDRO THERAPY
SWIMMING POOL


PHYSICAL EDUCATION / LEISURE AREA
PHYSICAL EDUCATION CLASSROOM
OPEN TO GYMNASIUM BELOW
HIGH PERFORMANCE / FITNESS CENTER
POOL BALCONY SEATING
OPEN TO SWIMMING POOL BELOW


FAN ROOM
FAN ROOM

Building Capacity

The table below shows the capacity of assignable spaces within the building: it includes the design load of students using classroom seats, instruction lab stations, seats in lounge and common areas, and the number of full-time faculty and staff with assigned space. In addition, many part-time staff and adjunct faculty will be working in the building, but providing an accurate count of part-time capacity is impossible.

CAPACITY PER CLASS HOUR BY SPACE		
Space Type	**Students**	**Faculty/Staff**
Instructional Labs	218	6
Classrooms	372	7
Faculty Work Room	0	8
Faculty Offices	2	22
Lounges & Commons	20	0
TOTALS	612	43

Space Type Summary

The table below summarizes the types and number of spaces and the net area of each space type.

SPACE TYPE SUMMARY		
Space Type	**Number**	**Net Area**
Private Offices	23	3,249 sf
Open Workstations	8	536 sf
Copy / Work Rooms	2	500 sf
Conference Rooms	2	500 sf
Storage Rooms	6	1,504 sf
Gymnasium	1	15,611 sf
Classrooms	7	9,499 sf
Instructional Labs	5	10,380 sf
Swimming Pool	1	6,376 sf
Locker Rooms	8	7,509 sf
Specialized Spaces	4	5,005 sf

Space Standards

The standardization of space allocations for equivalent functions has been a goal of the programming process. We recommend the following standards be followed.

SPACE STANDARDS	
Private Offices	
Chairperson / Director	150 sf
Faculty / Professional Staff	120 sf
Open Workstations	
Secretary	100 sf
Staff Assistant	80 sf
Group Spaces	
Small Conference (per person <20)	25 sf
Waiting (per person)	15 sf
Classrooms & Labs (per student station)	
Classrooms	25-30 sf
Instructional Labs	40-75 sf

Architectural Design Criteria

the latest edition of the *"Weber State University Design and Construction Standards for Architects and Engineers"* provides a detailed listing of the applicable standards and processes, and are incorporated in this program by reference. Any deviation from these standards will require the express written approval of the State Division of Facilities Construction and Management, and, as applicable, the appropriate code review authority.

APPLICABLE CODES & STANDARDS for DESIGN & CONSTRUCTION

Applicable Codes and Standards

Materials, design and construction will conform to standards established by Weber State University and the State Division of Facilities Construction and Management. In addition, it will conform to all building, life-safety, accessibility, and energy codes adopted by the State of Utah at the time of design and construction, whether or not they are specifically referenced in this document. If there are conflicting standards, code provisions or regulations, the most stringent will govern unless such requirement is waived in writing by Weber State University and the Utah State Division of Facilities Construction and Management.

- 2000 International Building Code - (with Utah amendments)
- 2000 International Mechanical Code - (with Utah amendments)
- 2000 International Plumbing Code - (with Utah amendments)
- ASHRAE 90.1 1999
- 2000 International Fire Code.
- National Electrical Code - (Current edition)
- American Society of Heating Refrigeration, and Air Conditioning Engineers (ASHRAE)
- Life Safety Code
- State of Utah Boiler & Pressure Vessel Rules & Regulations
- American Society of Mechanical Engineers (ASME)
- National Electrical Safety Code
- American Society of Testing & Material (ASTM)
- Occupational Safety & Health Administration (OSHA)
- National Fire Protection Association (NFPA)
- "Design and Construction Standards for Architects and Engineers" for Weber State University.
- "Design Criteria," Department of Facilities and Construction Management, State of Utah, Department of Administrative Services

Code Review (2000 IBC)

Occupancy
(Chapter 3)
- A-4 Assembly uses for viewing of indoor sporting events and activities
- A-3 Assembly uses not classified as A-4
- B Offices, classrooms, accessory spaces
- B Mechanical and storage incidental to other occupancies

Occupancy Separation
(Table 302.3.3)
- A-4 to A-3 — 0 hour
- A-4 to B — 2 hour
- A-3 to B — 2 hour

(Exception b)
- Storage rooms over 100 sf to other areas — 0 hour w/ sprinkler system

Incidental Use Area Separation Required
(Table 302.1.1)
- Furnace room over 400,000 btu/hr input — 0 hour w/ sprinkler system

(Table 302.1.1)
- Storage room over 100 sf to assembly areas — 1 hour

Type of Construction
(Chapter 6)
- Type V-A

Frontage
(506.2)
- Open Perimeter — 782 lf
- Total Perimeter — 986 lf
- Percent Open — 79.3%

Occupancy Separation Required
- Yes, to the 1980's Addition

Fire Sprinklers
- Yes

Stories Allowed
(Table 503)
- A-4 — 2 stories
- A-3 — 2 stories
- B — 4 stories

Allowable Building Area

Occupancy	A-4	A-3	B
Program Area	22,565	32,392	41,383
Allowable Area (Table 503)	11,500	11,500	18,000
Frontage Incr. (506.2)	53.4%	54.3%	54.3%
Multi-Story Incr. (503.3)	300%	300%	300%
Sprinkler Incr. (506.3)	200%	200%	200%
Tot. Allow. Area	106,467	106,467	166,644
Actual/Allowable (302.3.3)	0.23	0.32	0.26

Total: 0.80 is less than 1

Fire-Resistive Requirements
(Table 601)
- Structural frame — 0 hr
  Including columns, girders, trusses
- Bearing walls:
  - Exterior — 0 hr
  - Interior — 0 hr
- Nonbearing walls and partitions
  - Exterior — 0 hr
    (Table 602) (assuming 30' fire separation)
  - Interior — Non-combustible construction
    (section 602)
- Floor construction — 0 hr
  Including supporting beams and joists
- Roof construction — 0 hr
  Including supporting beams and joists

ARCHITECTURAL ALTERNATES

If additional funding is available, the first Additive Alternate should be the addition of a three-lane running track at the balcony level. So as not to reduce the area of the north and south balconies, this track should be suspended from the roof structure. On the west side, the running track will replace the existing catwalk that connects the north and south balconies with the elevator. On the east side, the track will run through the old ticket office/lobby area. This will afford an outside view once each lap. The running track serves as the connection between the north and south balconies and the elevator.

The second Additive Alternate should be the replacement of the existing “Yard” pool with a “Meter” pool. There is not space for eight lanes, so only six will be provided. The original pool has pipe tunnels around all sides. These should be removed with the pool. Current pool technology means the new pool will be directly buried.

CONSTRUCTION PHASING

Because all of the locker rooms for the Swenson Gym/HPEC are located in the Swenson Gym, the old wrestling room will be converted into new locker rooms before the general demolition. Work on both sides of the hall between the Swenson Gym and the HPEC should be done simultaneously.

This level, which is two stories below grade, is to low to reach a sanitary sewer without considerably deep trenching to reach a man hole on the south side of the HPEC. It is recommended that a duplex sewage ejector pump be installed to lift the sewage up one level to connect into the sanitary sewer in the floor above in the Swenson Gym. All hot and cold water, and HVAC needs to come from the HPEC. In addition, a means of providing exhaust from this space needs to be provided. There is a light well to the classroom just above this space that is the closest connection to the exterior.

The State and Campus Fire Marshals have agreed to considering the connecting hall an intervening space, so no exit is required through the Swenson Gym during construction.

STRUCTURAL BASIS FOR DESIGN

The Swenson Gymnasium was evaluated as part of a 1991 Seismic Vulnerability Assessment of Weber State University buildings. This study, completed by Reaveley Engineers & Associates, assigned the building a seismic performance rating of "POOR" and estimated retrofit costs to be $1,655,000. The evaluation was very limited in scope and was only intended to identify those buildings that are potentially vulnerable to seismic forces, and assign order of magnitude costs to potential upgrades. The 1991 report is included in Appendix B describes the evaluation process in greater detail.

At this time, no additional analysis or evaluation has been performed. No in-depth seismic evaluation has been completed on the building. All assessments of potential deficiencies and possible upgrade measures are based entirely on experience in upgrading similar buildings and on engineering judgement. We would advise that a detailed analysis be completed and specific deficiencies be identified prior to the expenditure of any retrofit dollars.

Building Description

The Swenson Gymnasium is approximately 96,000 square foot building that was completed in 1962. This means that the building would have been designed under the requirements of the 1958 Uniform Building Code. At that time Utah was designated as seismic zone 2. The seismic design requirements were very minimal at that time. The seismic requirements were actually part of the Appendix to the code, which was not adopted locally.

The building is supported on reinforced concrete spread footings. The building has a basement level which is concrete slab on grade. The main floor areas of the building are constructed of precast concrete double Tees with a 2" thick concrete topping. Reinforced concrete walls, beams and columns support the double Tees. There is a balcony level that is also formed using precast concrete double Tees. The bleachers at the balcony area consist of precast seating sections supported by cast-in-place concrete beams. The low roof structure on the west side of the building is also of precast concrete double T construction with no topping slab indicated. The high roof portions of the building are constructed of tapered steel long span girders supporting a wood 3x6 tongue and groove decking. There are a number of CMU walls within the building that appear to be unreinforced.

Deficiencies

The following items appear to be seismic deficiencies. It should be noted again that no formal calculations have been generated as part of this assessment. A detailed analytical evaluation may determine additional deficiencies that have not been noted.

- Lack of diaphragm shear capacity at high wood roofs.
- Lack of shear transfer load path from roof deck to concrete walls at east and west sides of high roof over gym.
- Lack of load path from roof deck to concrete walls at east and west sides of the natatorium due to clerestory windows.
- Lack of lateral resistance at north side of natatorium. The entire north wall is glass with no apparent frames, braces, shear walls, etc.
- Lack of shear transfer load path at precast double T support points. The only connection at the typical double T support as at the base of the stem. This connection provides no path for transferring horizontal shear from the double T flange into the supporting shear wall.
- Lack of shear transfer between adjacent double Tees. The typical flange connection between adjacent double Tees consists of a flat plate embedded in the edge of each flange with a section of rebar placed between and welded to each embed. This type of connection is very brittle due to welding of reinforcing steel, and has performed poorly in major seismic events.

- Lack of load path from roof deck to concrete walls at west elevation (classroom/office area) due to clerestory windows.
- Presence of unreinforced CMU partitions. These walls pose a significant falling hazard when subjected to out of plane loading.
- Lack of lateral resistance on all sides of the mezzanine level lobby on the east side of the building. This lobby is glass or clerestory window on all sides.

Potential Upgrade Measures

The following are potential upgrade measures for the deficiencies listed above.

- Provide a plywood overlay nailed to the tongue and groove decking below.
- Provide steel X bridging between steel girders to transfer diaphragm shear from the roof deck to the concrete wall.
- Provide steel braced frames or concrete infill panels at the clerestory windows.
- Provide new steel braced frame or concrete shear walls along this side of the building.
- Provide a new steel angle connection between the flange of the double Tee and the concrete wall.
- Provide fiberglass or carbon fiber reinforcing at the flange to flange connections.
- Provide steel braced frames or concrete infill panels at the clerestory windows.
- Remove all unreinforced masonry from the building.
- Provide new steel braced frames or concrete shear walls on all sides of the lobby.

Basis of Design

All new construction should conform to the requirements of the International Building Code. We recommend that the design of any seismic upgrade work be performed in accordance with FEMA 356 “Prestandard and Commentary for the Seismic Rehabilitation of Buildings”.

Any seismic remediation work should be made based on the results of a comprehensive analytical evaluation of the building’s lateral force resisting system. Without this type of evaluation as the basis of any upgrade, remedial measures may be incorporated, which improve the performance, but fall short of meeting the full requirements at any given location.

MECHANICAL BASIS FOR DESIGN

General

The existing mechanical systems including all Equipment, Piping, Ductwork, Fire Sprinkling and Automatic Temperature Control are to be demolished with the building interior. The only items to remain are the swimming pool filters, pool piping system, pool heat exchangers and the building underground waste systems. The underground sanitary waste and storm drain systems must be video taped and pressure tested at the conclusion of the demolition process to determine their condition. Any underground lines found defective must be abandoned and capped. New underground sewer lines as required are to be provided to serve the new systems.

The swimming pool supply ducts in the piping tunnel around the swimming pool may remain if they are examined, pressure tested and in good condition.

Existing utilities must be valved and capped before the demolition process.

The design and construction is to comply with the current Utah State Division of Facilities and Construction Management Architect Engineer Design Guide and the Weber State University "Design and Construction Standards for Architects and Engineers."

The mechanical systems for the building are to be energy conserving and suitable for the building occupancy. Systems and equipment are to have a proven history of providing efficiency and optimal energy conservation. Systems are to comply with the ASHRAE 90.1 Energy Code.

Various alternatives for the mechanical systems are to be considered with consideration given to initial cost and life cycle cost implications.

Automatic temperature controls will be suitable for the building systems and occupancy. The control system will be Johnson Metasys for compatibility with campus controls and energy management system.

Utilities

Existing Utilities

The existing utilities are as follows:

- 6" sanitary sewer leaving the building near the NW corner of the building.
- 8" storm drain leaving the building near the NW corner of the building.
- 4" domestic water main entering the building near the NE corner of the building.
- 6" high pressure steam & 4" condensate return mains entering the building near the NW corner from tunnel.
- 8" chilled water supply and return mains entering the building near the NW corner from tunnel.
- 3" natural gas line entering the building near NW corner from tunnel.
- The swimming pool backwash is presently connected to the sanitary sewer on the south side of the building from the existing student locker rooms.

Heating, ventilating, and air conditioning

The building is to be heated, cooled, and ventilated with systems suitable for the building function and occupancy according to ASHRAE standards.

The mechanical system cost estimates are based on the following types of systems:

Heating System

Two heat exchangers generate 180° F. hot water heating from the campus steam system. Separate heat exchangers will be required to heat the pool and provide hot water for domestic hot water requirements.

Cooling System

45° F. chilled water from campus chilled water system.

- Gymnasiums:
  - Central Station air handling systems with variable speed motors for energy conservation in low occupancy periods. Supply air delivered at the ceiling. Return air returned from floor level. Fresh and return air mixing dampers, filters 30% dust spot efficiency, heating and cooling coils.
- Locker Rooms:
  - Make up air heat recovery units for 100% fresh air supply and 100% exhaust should be considered.
- Swimming pool:
  - A dehumidifying system will be required to control space relative humidity and temperature. The pool area should be kept negative in relationship to adjacent occupied spaces to control chlorine odors.
- Office areas, classrooms:
  - Central station variable air volume fan units with variable frequency drives, fresh and return mixed air dampers, 30% dust spot efficiency filters, heating and cooling coils.
  - Variable air volume with reheat terminal air boxes with pressure independent controls have finned radiation under large window areas.

Air Handling

Special consideration should be made to coordinate fan systems with building time of day use so that areas that are not in use may have their systems shut down. Large areas such as gymnasiums with variable loads should have separate fan units and a means of controlling ventilation to minimum requirements.

Heat recovery should be considered for areas such as locker rooms with exhaust and makeup air.

The building is to be heated, cooled, and ventilated with systems suitable for building occupancy and with the specified air changes per hour per student.

Outside air ventilation will comply with ASHRAE Standard 62-1 989.

Plumbing Systems

Plumbing system will be designed to meet the International Plumbing Code as adopted by the State of Utah, D.F.C.M. Guidelines, and WSU Guidelines.

Domestic hot water will be heated using the campus high pressure steam system. Shower hot water will be limited to 110° F.

Fire Protection Systems

Fire sprinkler protection is to be provided suitable for the building type and occupancy. Fire sprinkler systems are to comply with NFPA, Campus Fire Marshal and State of Utah Fire Marshal requirements. Building fire alarm system will tie to the central campus fire alarm system.

Design Conditions

The mechanical system will be designed to maintain comfortable conditions according to the Utah State Energy Code and D.F.C.M. A/E Design Guide.

- Outside design conditions:
  - Summer 95°F. DB 65°F. WB
  - Winter 5°F. DB
- Inside design conditions:

SPACE	CGL F.	HTG F.	NOISE RC-NC	OSA CFM/ PER	RH% MAX
Offices	72	70	35	20	45
Conference	72	70	30	20	45
R.R./ Locker	78	70	45	15	-
Gymnasium	75	68	40	15	45
Classrooms	72	70	30	15	45
Swim. Pool	80	80	40	.5 cfm/sf	45
Pool Balcony	80	80	40	15	60

General Mechanical Requirements

HVAC, where denoted in each Individual Space Outline, indicates the space requires heating, ventilating and air conditioning with room conditions as shown previously under Design Conditions.

Room supply air requirements will be determined using the ASHRAE Guide load calculation procedures.

Outside air requirements will be determined using the ASHRAE 62-1989 ventilation requirements.

See WSU Design Guidelines for Weber State University philosophy on building design for mechanical system general requirements.

Include steam (Vortex) meter tie4d into the Metasys control system.

Energy Conservation

DFCM has adopted the 1999 ASHRAE 90.1 standard. In addition, the State of Utah has a policy that requires all new State buildings to improve on the ASHRAE 90.1 minimum requirements by 25%.

Mechanical System Commissioning

To comply with 1999 ASHRAE 90.1, the mechanical system is required to be commissioned according to the 1996 ASHRAE Guideline 1 “The HVAC Commissioning Process.” The commissioning Authority will be hired directly by the State to oversee the commissioning. Include in the contract documents a commissioning specification outlining the responsibility of the commissioner and commissioning team.

Individual Space Mechanical Requirements

- Offices:
  - 20 cfm/person min. outdoor air
  - 20 cfm/person min. air circulation
  - 72 degrees F. room temp. Summer
  - 70 degrees F. room temp. Winter
  - 20 NC/RC sound criteria
  - Provide minimum of 2 watts/sw. ft.
  - Misc. load for computer and video equipment

- Conference Rooms:
  - 20 cfm/person min. outdoor air.
  - 20 cfm/person min. air circulation
  - 72 degrees F. room temp. Summer
  - 70 degrees F. room temp. Winter
  - 20 NC/RC sound criteria
  - Provide minimum of 2 watts/sw. ft.
  - Misc. load for computer and video equipment

- Restroom Locker Rooms:
  - 5 min. air change exhaust
  - 15 cfm/locker exhaust
  - 78 degrees F. room temp. summer
  - 75 degrees F. room temp. winter
  - 40 NC/RC sound criteria

- Gymnasium Spectator Area:
  - 15 cfm/person min. air circulation
  - 15 cfm/person outside air when present only
  - 75 degrees F. room temp. summer
  - 68 degrees F. room temp. winter
  - 45 NC/RC sound criteria

- Storage Areas:
  - .5 cfm/sq. ft floor area exhaust
  - 68 degrees F. room temp. winter
  - Provide additional exhaust for special equipment

- Classrooms:
  - 15 cfm/person min. air circulation
  - 15 cfm/person min. outdoor air
  - 72 degrees F. room temp. summer
  - 70 degrees F. room temp. winter
  - 30 NC/RC sound criteria
  - Provide 2 watts/sq. ft. misc. load for computer and video equipment

- Swimming Pool Spectator Area:
  - 15 cfm/person min. air circulation
  - 15 cfm/person outside air when present only
  - 75 degrees F. room temp. summer
  - 75 degrees F. room temp. winter
  - 45 NC/RC sound criteria
  - 6 air changes ventilation
  - Room to be negative pressure

- Mechanical Room:
  - 10 minute air change exhaust
  - Heat space to 65 degrees F.
  - Cool space to 85 degrees F.

- Lobby / Corridor:
  - 20 cfm/person min. outdoor air
  - 20 cfm/person min. air circulation
  - 72 degrees F. room temperature summer
  - 72 degrees F. room temperature winter

- Janitor:
  - Heat to 72 degrees F.
  - Exhaust 10 minute air change

- Electrical Room:
  - Heat to 65 degrees F.
  - Provide for cooling to maintain 90 degrees F.

WSU Swenson Gym

Area Description	Floor Area	cfm/sf	CFM	Fan Rm Area %	Fan RM sf Total	Supply duct sf	Return duct sf	Fresh air duct sf	Relief Air duct sf	Rnd duct dia inch	Rect duct wdth	i heigh
LEVEL 2												
Basket Ball Court N	7560	2	15120	10	1512	15.1	15.1	15.1	15.1	52.7	66	33.0
Basket Ball Court S	7560	2	15120	10	1512	15.1	15.1	15.1	15.1	52.7	66	33.0
Balcony N	4280	1.3	5564	6	334	5.6	5.6	5.6	5.6	31.9	40	20.0
Balcony S	4280	1.3	5564	6	334	5.6	5.6	5.6	5.6	31.9	40	20.0
Lobby Office	1408	1.3	1830	6	110	1.2	1.8	1.8	1.8	15.0	18.7	9.4
Swim Pool Bleachers	1008	2	2016	6	121	2.0	2.0	2.0	2.0	19.2	24.1	12.0
LEVEL 1												
Men,women,hydro therapy	2136	2	4272	8	342	2.8	4.3	4.3	4.3	22.9	28.6	14.3
Storage,Phys Therapy,Sto	3317	1.5	4976	6	299	3.3	5.0	5.0	5.0	24.7	30.9	15.5
Men,women,locker	3424	2	6848	8	548	4.6	6.8	6.8	6.8	28.9	36.3	18.1
Office, Lounge	3424	2	6848	8	548	4.6	6.8	6.8	6.8	28.9	36.3	18.1
Swim Pool	6400	2	12800	10	1280	8.5	12.8	12.8	12.8	39.6	49.6	24.8
LEVEL 0 OPTION A												
Dance Studio, Cl rms	4719	2	9438	8	755	6.3	9.4	9.4	9.4	34.0	42.6	21.3
Nutrition, Lockers	3808	1.5	5712	6	343	3.8	5.7	5.7	5.7	26.4	33.1	16.6
LEVEL 0B												
Class Rooms & Lockers	5640	1.25	7050	6	423	4.7	7.1	7.1	7.1	29.4	36.8	18.4

ELECTRICAL BASIS FOR DESIGN

General

The building was constructed in the early 1960s. The existing power and lighting systems are mostly original and are old and obsolete and will be replaced. The fire alarm system is fairly new and can be reused. However, extensive work will be required to relocate and add smoke detectors, horn/strobes, etc. based on the new building design. The voice and data systems will be reconfigured and upgraded for the new classrooms and remodel of other spaces. There is currently no paging system. A paging/intercom system will be added. Consideration should be given for a new sound system in the Dance Room. The security system consists of security cameras in key corridors and door alarms. The security system will be reused to the extent possible but will be brought up to campus standards. The campus wide clock system will be extended to the newly remodeled spaces. The student card system for vending, entry to the building, and selected interior spaces should be included.

Proposed Electrical Systems

Power System

The existing power system should be removed in its entirety. The building is approximately 96,000 square feet. A building of this size would be most efficiently served with a 277/480 V system. To serve the classrooms and offices, a power density of 16 VA/sf for these areas should be used. For the large open gym spaces, a lower power density can be used since there will not be as many outlets and other 120 V devices. A power density of 12 VA/sf should be adequate for these spaces. To serve the building with its new functions, a new 1600 A, 277/480 V, 3-phase, 4-wire system should be installed. To serve the 120 V loads such as computers, general purpose outlets, electronic equipment, etc. plus existing 208V pool equipment, either a single 500 kVA transformer or approximately 500 kVA worth of distributed transformers would be required.

A new 1000 kVA pad-mounted, transformer will be required. The least expensive and easiest to maintain place for the new transformer would be outside near the boiler room entrance or somewhere near the northwest corner of the building. The transformer could be placed in a vault provided a means to get the transformer in and out is provided.

A new medium voltage switch will be required to replace the existing oil switch. The existing transformer vault could be used for this purpose. The switch should be a vacuum switch with SF6 gas insulation, vault-mounted on a three foot pedestal with 200 A load break elbows.

New medium voltage cable will be required to serve the building. The cable will be copper, EPR, 133% insulation, 15 kV, MV-105. Either provide conduit with three 15 kV cables with a copper tape shield and a ground conductor with THWN insulation sized the same as the phase conductors or provide triplexed MC cable with fire-resistant PVC jacket.

A new electrical room with a new main panel, 480-120/208V transformer, 120/208 V distribution panel, branch panels, and lighting control panels will be required in the existing boiler room. (Note that the entire service and electrical room could be moved if the medium voltage cable is extended to the new location.) The new main service entrance panel should be 1600 A, 277/480 V, 3-phase.

277/480 V branch panels should be distributed throughout the building with approximately one panel for every 20,000 sf. The main panel should serve either a 277/480 V distribution panel or motor control center for the new mechanical equipment. 120/208 V branch panels will also be required to be distributed throughout the building with approximately one panel for every 5,000 sf.

Mechanical equipment requiring variable frequency drives (VFDs) must comply with DFCM standards for VFDs included in the “Design Criteria for Architects and Engineers” posted on the DFCM web site.

The panel serving the exterior lighting is to be GFCI protected. GFCI protection will also be required for the pool lighting, outlets and other equipment as required by the NEC.

Classrooms and similar spaces should have a minimum of two general purpose outlets per wall with additional outlets and associated voice/data or data jacks for the instructor or for other computers and equipment. Provisions should be made for an overhead projector with power in the ceiling and at powered roll down screens (if used) and conduit running from the projector to the instructor’s station computer. Power should be supplied at all TV locations.

Offices should have at least one outlet per wall with a voice/data jack in the corner opposite the door or as required for the anticipated furniture.

In the gym, power for the new scoreboards should be provided and control wiring routed from the scoreboards to the scorer’s table. Wire cages should be provided to protect the scoreboards.

Locker rooms, toilet rooms, janitors’ closets, the building exterior, and other locations within 6' of a water source are to have GFCI outlets.

Overall, there should be no more than eight outlets per circuit to meet DFCM standards. Also, all circuits serving computers should have no more than four outlets.

There is an emergency “code blue” phone at the southwest corner of the building by the parking lot that current has a problem of tripping the circuit. The emergency phone must be rewired to the emergency power system and put on a GFCI circuit.

Emergency power for life safety systems and data systems servers will be provided by the existing generator. A generator load study is to be done to confirm that the required capacity for the Swenson Gym will be adequate.

Include sub-meters tied into the Metasys control system (KW+KWH).

Lighting and Lighting Control

The new lighting must meet the requirements of ASHRAE 90.1-1999 that requires lighting to comply with the listed lighting power densities and requires lighting control for every enclosed space.

To meet the lighting power density requirements, efficient lighting sources must be used throughout the building. Primarily T8 lamps and electronic ballasts are to be used. Compact fluorescent fixtures with electronic ballasts can also be used. To solve the problem of a delayed restart of the existing metal halide fixtures in the gym, either HID lighting with instant restrike or high bay fixtures with compact fluorescent sources is to be used. All lighting and signage in the gym are to have wire guards or similar protection against impacts from balls of all sizes.

The gym lighting must comply with the requirements of the "IES RP6, Recommended Practice for Sports and Recreational Area Lighting." Lighting should be designed for Class I and Class II Play for college events. For Class II Play, the fixtures to remain on should be in the pattern shown in RP6.

All other spaces should be designed to comply with the recommendations for illumination levels and other requirements of the "IESNA Lighting Handbook."

Classroom lighting must be designed to prevent glare and allow for comfortable viewing of televisions, projected presentations, and writing on whiteboards. Indirect lighting should be considered. As a minimum, parabolic or other "cutoff" lighting should be provided. Multiple level lighting and turning off lights at the front of the room should be considered to have lighting appropriate for TV or projection viewing. Conference rooms should also have multiple lighting levels for TV or projection viewing. Office lighting should be designed to reduce glare on computer screens. Special care should be taken for larger office spaces or open offices. Parabolic or indirect fixtures should be used in those locations.

Vandal resistant, fixtures that can withstand damp conditions should be used in locker rooms and rooms. Shower fixtures must be wet-label. Rooms adjacent to the pool or the pool room itself should be able to tolerate high humidity without corrosion.

To comply with ASHRAE 90.1-1999, automatic lighting control is required for every enclosed space. For classrooms, offices, storage rooms, toilet rooms, etc. occupancy sensors are to be used. If VAV boxes are used in the mechanical system, an extra contact on the occupancy sensor relay pack should be provided to switch the VAV boxes to the unoccupied mode for the space when no motion is detected. For the gym, corridors, pool and other common spaces, the existing Johnson Metasys system is to be used for time clock control of the lighting. During programmed off periods, time limited override controls should be placed in the main office area where staff can turn the lights on for a preset time. The pool lighting is also to have daylight control such that the lights over the pool are turned off when adequate sunlight is available. Outdoor lighting is also to be controlled such that the lights are turned on at dusk and off at dawn with a photocell and then turned off during selected hours in the middle of the night with the Metasys system. Accent lighting is to be separated from security and walkway lighting such that accent lighting can be on a different schedule.

Fire Alarm

The building is under the jurisdiction of the Utah State Fire Marshall and the Weber State Campus Fire Marshall and must comply with the regulations of the Utah State Fire Marshall's Office. Since the building will be sprinkled, complete coverage will not be necessary. Smoke detectors 30' on center in all egress pathways will be required along with other requirements of the IBC and NFPA. Horn/strobes must be added to provide complete coverage of the building. The existing Notifier system is to be reused and additional devices and wiring added to adapt to the new building design.

Voice and Data

The voice and data systems must comply with the EIA/TIA guidelines. A main phone and data room (MDF) will be established in a location that is clean and accessible. Smaller communications closets (IDF) will be required if any of the cabling for data jacks is over 290'. A fiber backbone is to be extended to the MDF and IDFs. Wireless access ports are to be placed to serve the building. Locations are to be coordinated with the campus information systems (IT) group. For hard wired voice/data jacks, provide a 2-gang box with a single gang mud ring and two 3/4" conduits to each box. DFCM standards require the conduit to run either to the phone board/server room or to a cable tray. A cable tray can be provided if the new ceilings are accessible. Cable trays, if used, should be routed in corridors or other spaces that will not interfere with classes or offices when new cables are being pulled. Cable trays should be run no more than 2' above an accessible ceiling to allow safe access through the ceiling grid. Voice/data distribution including cabling, jacks, patch panels, punch down blocks, etc. are to be included in bid documents

Sound

A sound system is to be provided for the dance room. The system is to be able to play prerecorded music from cassette tapes, DVDs, MP3, etc.A sound system should also be provided for the gym that will allow announcements, music, etc. Controls should be convenient to the scorer's location.

Clocks

Clocks are to be provided throughout the building in common spaces. The clocks are to be connected to the campus wide Simplex master clock system. Coordination with the Simplex vendor is required to confirm that the clock signal from the campus main clock controller is adequate.

Security

The existing cameras will be uninstalled before demolition. They will be reinstalled during construction to adapt to the new building design. The existing security system that sounds an audible alarm at perimeter doors must be updated to meet current campus standards.

Student Access Card System

A campus standard student card system will be added to the vending machines. Selected perimeter doors and interior doors should be roughed in for future electronic locking and unlocking with the student card system.

FORMAT OVERVIEW

The following sections contain the building program space summaries for all the required spaces in the new facility. It is organized into subsections broken down by major departmental areas and/or categories of space type. Following is detailed information regarding the contents, size and character of each space that comprise the department and/or category.

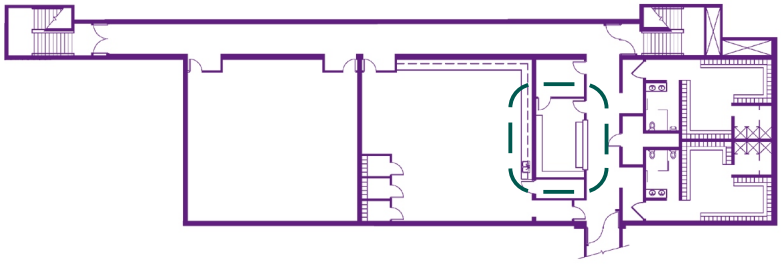
TERMINOLOGY

The terminology used in this program is standard terminology used by Architects. Terms such as NSF and GSF are related to the square footage of spaces described in the program. NSF is the Net Square Footage or the area a function will occupy. GSF is the Gross Square Footage that includes corridor systems, wall widths and miscellaneous support spaces such as mechanical rooms, restrooms, etc. Typically in education facilities the GSF can be derived from the NSF by using a multiplying factor. This factor is based on historical trends in education facilities and standards used by the State of Utah. The factor used in this program is 1.51 or 65.9% of the GSF is the NSF for new construction. This is an average factor of utilization; however, the Architect should take extra care to achieve the most efficient use of space.

The term *FULL SOUND CONSTRUCTION* refers to a particular construction assembly. This assembly is defined as: Metal studs extending from the floor to the structure above, with sound batts between studs, resilient channel on one side of the studs, and one layer of 5/8" gypsum board on both sides. All penetrations are to be sealed. All return air grilles are to have sound boots; as are all penetrations through sound walls. Lay-in ceiling panels in rooms required to have full sound construction should be a foil faced cast tiles. All doors in sound walls should be gasketed (i.e., *SOUND ISOLATION*).

SWENSON GYMNASIUM MASTER PLAN

RELATED LOCATION DRAWING



ISSUE ROOM

Architectural Requirements

Space Summary

- Space Type: Enclose Office
- Area Required: As shown on plans
- Location: Lower Level B

Finishes

- Floor: Static-free carpet
- Walls: Painted gypsum board
- Ceiling: Susp. 2x4 acoustical ceiling panels
- Sound: None required

Ceiling Height

- Above Finish Floor (min.): 8'-0"

Doors

- Type: Solid core wood w/ clear finish
- Frame: Painted hollow metal w/ glazed sidelight
- Special: 8'-0"x4'-0"h stainless steel counter door

Casework / Fixed Equipment

- Coat Rack: 18"x6"x3/4" oak plate w/ 2 dbl-prong hooks

Furnishings

- Work surface: (1) 24"x84"
- Work surface transaction counter: (1) 14"x84"
- Work surface, angled corner: (2) 24"x36"
- Work/table surface w/ rounded end: (3) 24"x36"
- Work station shelf unit: (2) 14"x42" 6-shelves high
- Work station keyboard shelf: (2) pull-out
- Task chair: (2) 27"x28" w/ arms, swivel, adjustable
- Waste can: (2) 14" diameter

Technical Requirement

Mechanical

- Outdoor Air: 20 CFM / person (min.)
- Air Circulation: 20 CFM / person (min.)
- Summer Design Temp.: 75° F
- Winter Design Temp.: 72° F
- Controls: DDC individual controls
- Sound Criteria: 30 (NC/RC)
- Special Systems: None required
- Plumbing: None required

Electrical

- Power: One duplex outlet every 12' with at least one per wall (min.). Additional capacity for equipment listed.
- Data: Capacity for one desktop computer (min.). Additional equipment as listed.
- Phone: Minimum one.
- Video: Capacity for future video and audio use.

Lighting

- Fixture Types: Fluorescent w/ electronic ballast
- Task Light: Required at all work surfaces
- Foot Candles: 75 / 30
- VCP: 70
- Controls: Auto sensor

Equipment (NIC)

- Desktop computer and laser printer.

SWENSON GYMNASIUM MASTER PLAN

RELATED LOCATION DRAWING

SPORTS/RECREATION CHECK-IN

Architectural Requirements

Space Summary

- Space Type: Open Area Check-in Desk
- Area Required: As shown on plans
- Location: Main Floor Building Entry

Finishes

- Floor: Static-free carpet
- Walls: Painted gypsum board
- Ceiling: Susp. 2x4 acoustical ceiling panels
- Sound: None required

Ceiling Height

- Above Finish Floor (min.): 9'-0"

Doors

- None required.

Casework / Fixed Equipment

- None required.

Furnishings

- Work surface: (1) 24"x72"
- Work surface transaction counter: (1) 14"x72"
- Work surface, angled corner: (1) 24"x36"
- Work station keyboard shelf: (1) pull-out
- Task chair: (2) 27"x28"
  w/ arms, swivel, adjustable
- Waste can: (1) 14" diameter

Technical Requirement

Mechanical

- Outdoor Air: 20 CFM / person (min.)
- Air Circulation: 20 CFM / person (min.)
- Summer Design Temp.: 75° F
- Winter Design Temp.: 72° F
- Controls: DDC individual controls
- Sound Criteria: 30 (NC/RC)
- Special Systems: None required
- Plumbing: None required

Electrical

- Power: One duplex outlet every 12' with at least one per wall (min.).
  Additional capacity for equipment listed.
- Data: Capacity for one desktop computer (min.).
  Additional equipment as listed.
- Phone: Minimum one.
- Video: Capacity for future video and audio use.

Lighting

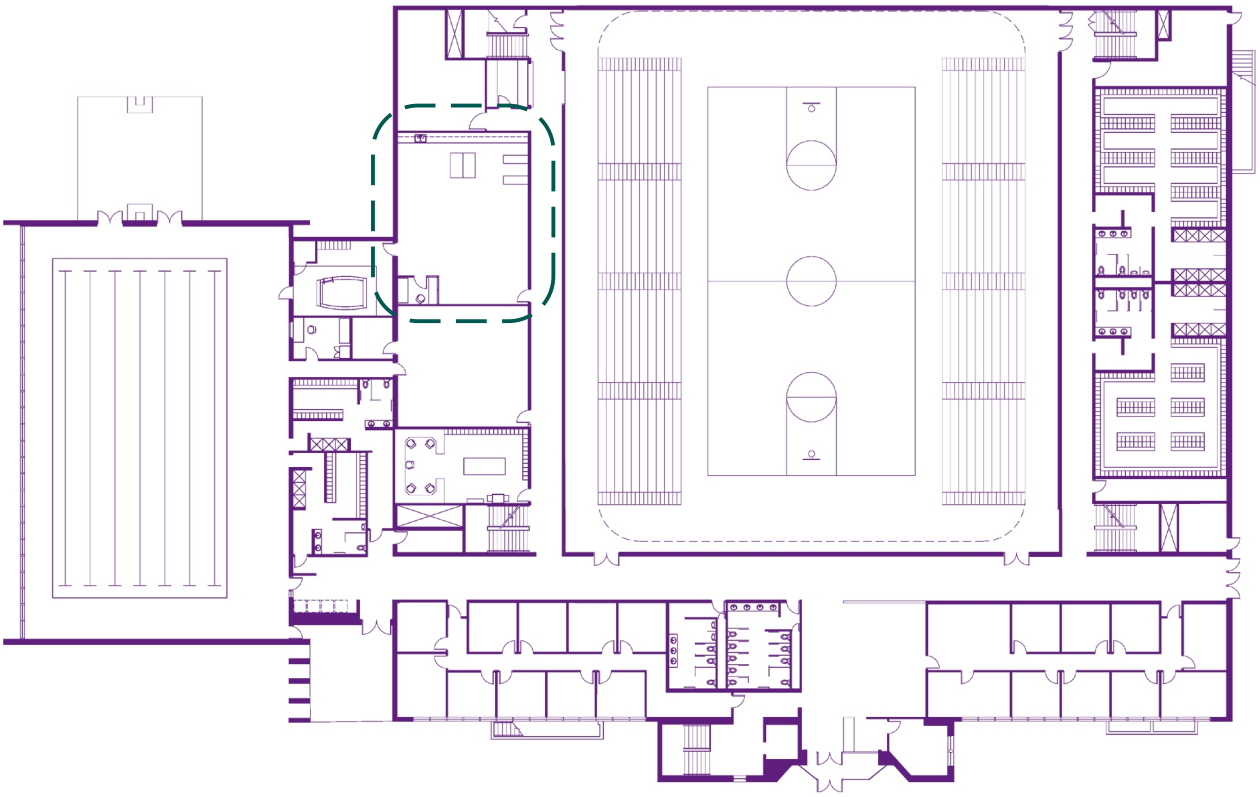
- Fixture Types: Fluorescent w/ electronic ballast
- Task Light: Required at all work surfaces
- Foot Candles: 75 / 30
- VCP: 70
- Controls: Auto sensor

Equipment (NIC)

- Desktop computer and laser printer.

SWENSON GYMNASIUM MASTER PLAN

RELATED LOCATION DRAWING



ATHLETIC TRAINING CLASSROOM & LAB

Architectural Requirements

Space Summary
- Space Type: Instructional Lab
- Area Required: As shown on plans
- Location: Main Level

Finishes
- Floor: Carpet/Ceramic Tile
- Walls: Painted gypsum board w/ chair rail
- Ceiling: Susp. 2x2 acoustical ceiling panels
- Sound: Full sound construction

Ceiling Height
- Above Finish Floor (min.): 10'-0"

Doors
- Type: Solid core wood w/ clear finish
- Frame: Painted hollow metal w/ glazed sidelight
- Special: Sound isolation

Casework / Fixed Equipment
- Instructor console w/ podium: (1) 36"x96" capacity for data and media use
- Custom work counter: (5) 24"x48"x30"h workstations w/ keyboard shelf
- Base cabinet: (15 lf) 24"x36"h w/ laminate work surface, lockable doors & adjustable shelving
- Wall mounted cabinet: (15 lf) 12"x24"h above base units w/ lockable doors & adjustable shelving
- Storage cabinet: (1) 48"x24"x84"h w/ lockable doors & adjustable shelving
- Whiteboard: (1) 144"x48" w/ frame, map rail and tray
- Tack board / tack surface: (2) 36"x48"
- Clock linked to master campus system: (1)
- Monitor/projector mounts/ports & cable connections

Furnishings
- Student table: (as required) 20"x36"
- Task chair: (as required) 23"x20" armless, swivel, adjustable
- Waste can: (2) 14" diameter

Technical Requirement

Mechanical
- Outdoor Air: 15 CFM / person (min.)
- Air Circulation: 20 CFM / person (min.)
- Summer Design Temp.: 75° F
- Winter Design Temp.: 72° F
- Controls: DDC individual controls
- Sound Criteria: 30 (NC/RC)
- Equipment Load: N7.5 (225 watts/station)
- Plumbing: Sink, floor sink, water line

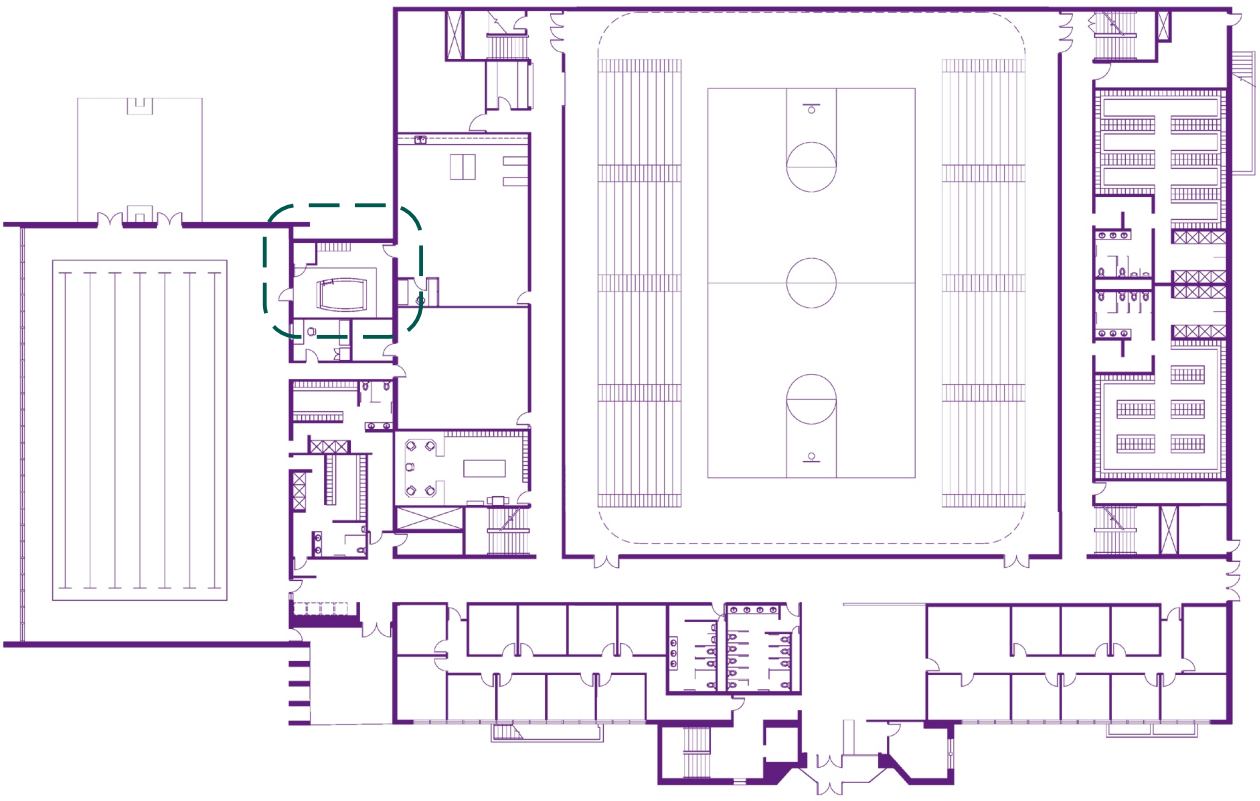
Electrical
- Power: One duplex outlet every 12', with at least one per wall on side walls, two per wall at front and rear (min.). Additional capacity for equipment listed.
- Data: Capacity for one laptop computer at each student station and console (min.). Additional equipment as listed.
- Phone: Capacity for future conversion to other uses.
- Video: Capacity for future video and audio use, including AMX reception and EDNET transmission and reception. Wireless microphones.

Lighting
- Fixture Types: Low glare T-8 fluorescent w/ electronic ballast
- Task Light: Required at console
- Foot Candles: 75 / 30, 10-15 at whiteboard
- VCP: 70
- Controls: Occupancy sensors Dimming capability at console

Equipment (NIC)
- Elmo desktop presentation unit: (1) 14"x12"x6"
- Ice maker: (1)
- Capacity for: video monitors; overhead, opaque, slide and film projectors; audio devices; computer printer.

SWENSON GYMNASIUM MASTER PLAN

RELATED LOCATION DRAWING



HYDRO-THERAPY ROOM

Architectural Requirements

Space Summary

- Space Type: Instructional Lab
- Area Required: As shown on plans
- Location: Main Level

Finishes

- Floor: Ceramic mosaic tile
- Walls: Epoxy painted gypsum board w/ ceramic tile wainscot
- Ceiling: Epoxy painted susp. gypsum board
- Sound: Full sound construction

Ceiling Height

- Above Finish Floor (min.): 9'-0"

Doors

- Type: Solid core wood w/ clear finish
- Frame: Painted hollow metal w/ glazed sidelight
- Special: Sound control

Casework / Fixed Equipment

- In-ground hydro-therapy pool: (1) 8'-0"x12'-0"
- Dressing room: (1) 5'-0"x5'-0"

Furnishings

- None required.

Technical Requirement

Mechanical

- Refer to previous *Total Facility Building Analysis* mechanical section for pool requirements.

Electrical

- Power: One duplex outlet every 12', with at least one per wall on side walls, two per wall at front and rear (min.). Additional capacity for equipment listed.
- Data: Capacity for one laptop computer(min.). Additional equipment as listed.
- Phone: Capacity for future conversion to other uses.
- Video: Capacity for future video and audio use.

Lighting

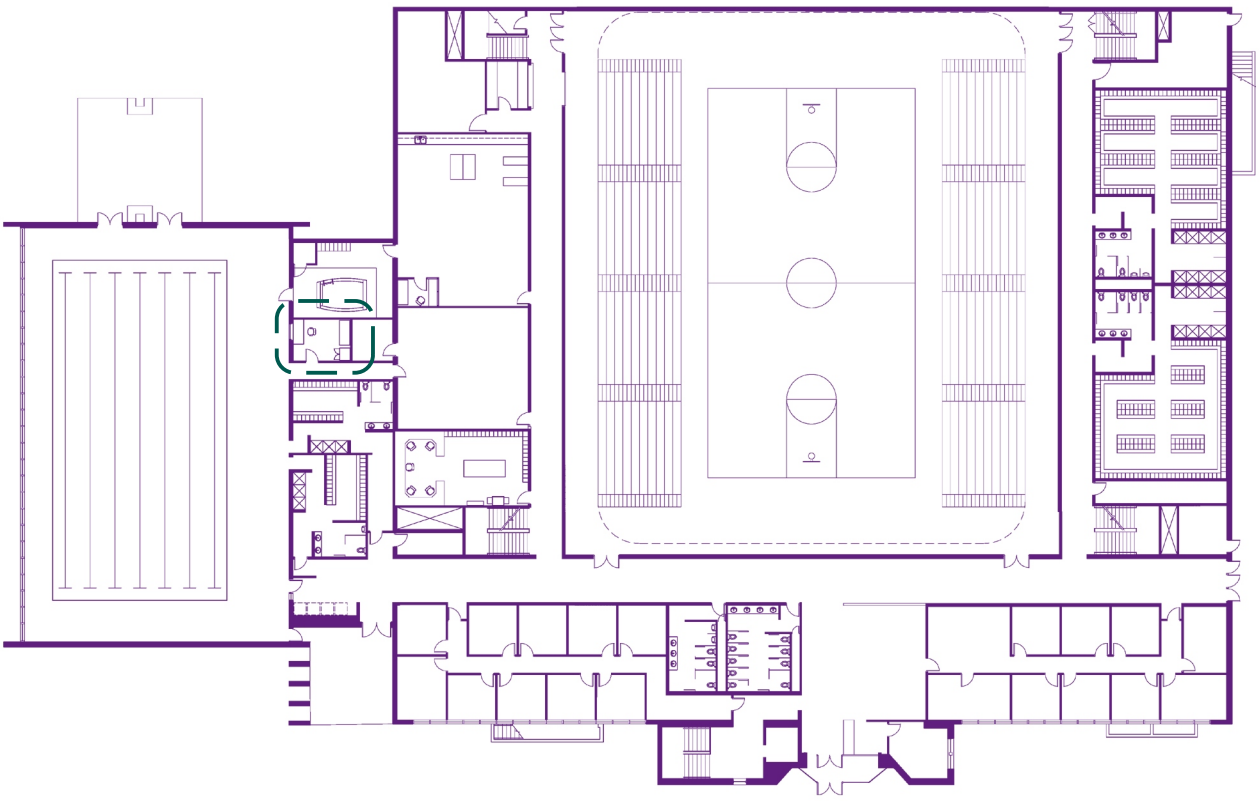
- Fixture Types: Low glare T-8 fluorescent w/ electronic ballast
- Task Light: None required
- Foot Candles: 75 / 30
- VCP: 70
- Controls: Occupancy sensors

Equipment (NIC)

- None required.

SWENSON GYMNASIUM MASTER PLAN

RELATED LOCATION DRAWING



FIRST-AID OFFICE

Architectural Requirements

Space Summary

- Space Type: Private Office
- Area Required: As shown on plans
- Location: Main Level

Finishes

- Floor: Static-free carpet
- Walls: Painted gypsum board
- Ceiling: Susp. 2x4 acoustical ceiling panels
- Sound: None required

Ceiling Height

- Above Finish Floor (min.): 8'-0"

Doors

- Type: Solid core wood w/ clear finish
- Frame: Painted hollow metal w/ glazed sidelight
- Special: None required

Casework / Fixed Equipment

- Coat Rack: 18"x6"x3/4" oak plate w/ 2 dbl-prong hooks
- Whiteboard w/ frame and tray: (1) 48"x48"

Furnishings

- Work surface: (1) 24"x60" and (1) 24"x78"
- Work surface, angled corner: (1) 24"x36"
- Work/table surface w/ rounded end: (1) 24"x36"
- Work station shelf unit: (2) 14"x48" 2-shelves high
- Work station shelf unit: (1) 14"x42" 6-shelves high
- Work station binder bin: (2) 15"x36" w/ lockable door
- Work station keyboard shelf: (1) pull-out
- Work station tack surface: (1) 24"x36"
- 2-Drawer lateral file: (1) 18"x42"
- Task chair: (1) 27"x28" w/ arms, swivel, adjustable
- Upholstered side chair w/ arms: (2) 24"x24"
- Exam table: (1) 24"x72"
- Waste can: (1) 14" diameter

Technical Requirement

Mechanical

- Outdoor Air: 20 CFM / person (min.)
- Air Circulation: 20 CFM / person (min.)
- Summer Design Temp.: 75° F
- Winter Design Temp.: 72° F
- Controls: DDC individual controls
- Sound Criteria: 30 (NC/RC)
- Special Systems: None required
- Plumbing: None required

Electrical

- Power: One duplex outlet every 12' with at least one per wall (min.). Additional capacity for equipment listed.
- Data: Capacity for one desktop computer (min.). Additional equipment as listed.
- Phone: Minimum one.
- Video: Capacity for future video and audio use.

Lighting

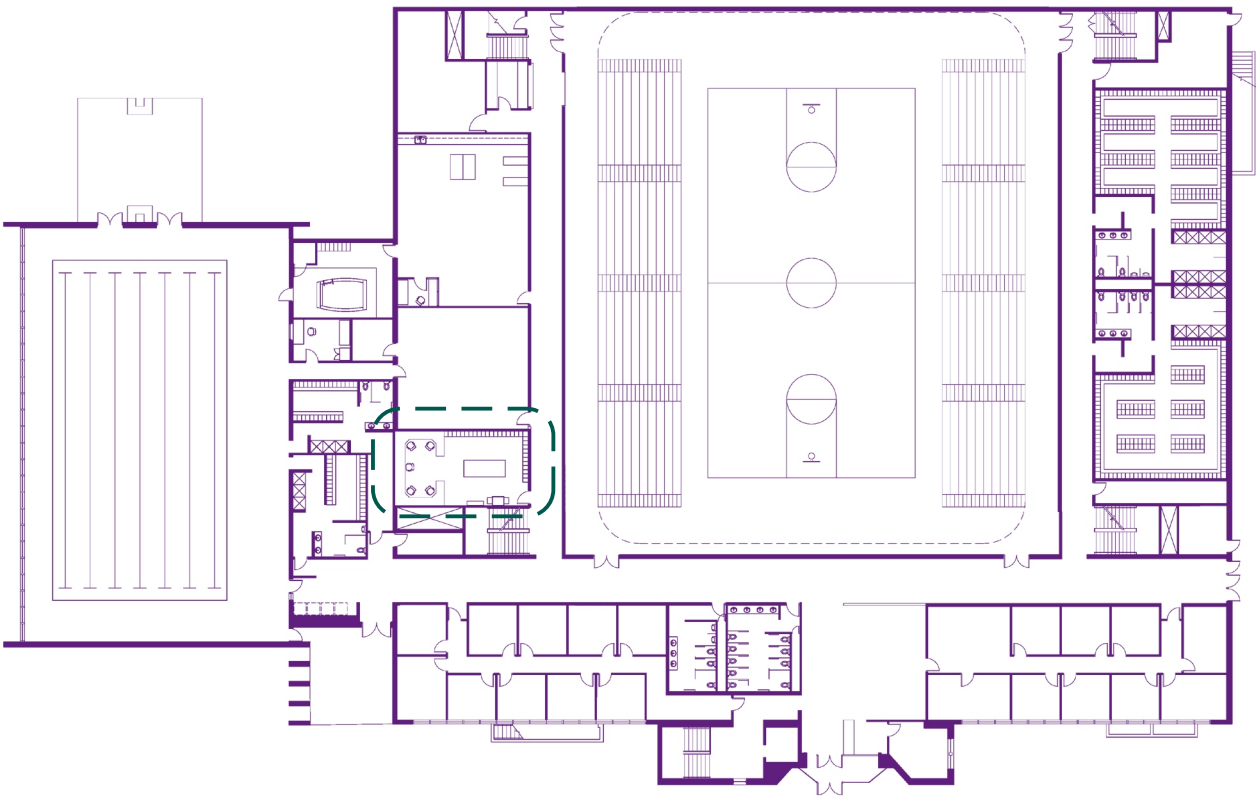
- Fixture Types: Fluorescent w/ electronic ballast
- Task Light: Required at all work surfaces
- Foot Candles: 75 / 30
- VCP: 70
- Controls: Auto sensor

Equipment (NIC)

- Desktop computer and laser printer.

SWENSON GYMNASIUM MASTER PLAN

RELATED LOCATION DRAWING



ADJUNCT FACULTY WORK ROOM

Architectural Requirements

Space Summary

- Space Type: Enclosed Work Room
- Area Required: As shown on plans
- Location: Main Level

Finishes

- Floor: Vinyl tile
- Walls: Painted gypsum board
- Ceiling: Susp. 2x4 acoustical ceiling panels
- Sound: None required

Ceiling Height

- Above Finish Floor (min.): 8'-0"

Doors

- Type: Solid core wood w/ clear finish
- Frame: Painted hollow metal w/ glazed sidelight
- Special: None required

Casework / Fixed Equipment

- Base cabinet: (20 lf) 24"x36"h w/ laminate work surface, lockable doors & adjustable shelving
- Wall mounted cabinet: (20 lf) 12"x24"h above base units

Furnishings

- Modular Workstation: (5) 64 square feet
- Task chair w/ arms: (5) 27"x28" swivel, adjustable
- Work station coat hook: (5) each
- Waste can: (5) 14" diameter
- Recycling receptacle: (2)

Technical Requirement

Mechanical

- Outdoor Air: 20 CFM / person (min.)
- Air Circulation: 20 CFM / person (min.)
- Summer Design Temp.: 75° F
- Winter Design Temp.: 72° F
- Controls: DDC individual controls
- Sound Criteria: 30 (NC/RC)
- Special Systems: None required
- Plumbing: None required

Electrical

- Power: One duplex outlet every 12' with at least one per wall (min.).
  One four-plex outlet per person (min.).
  Additional capacity for equipment listed.
- Data: Capacity for one desktop computer at each workstation (min.).
  Additional equipment as listed.
- Phone: Minimum one.
- Video: Capacity for future video and audio use.

Lighting

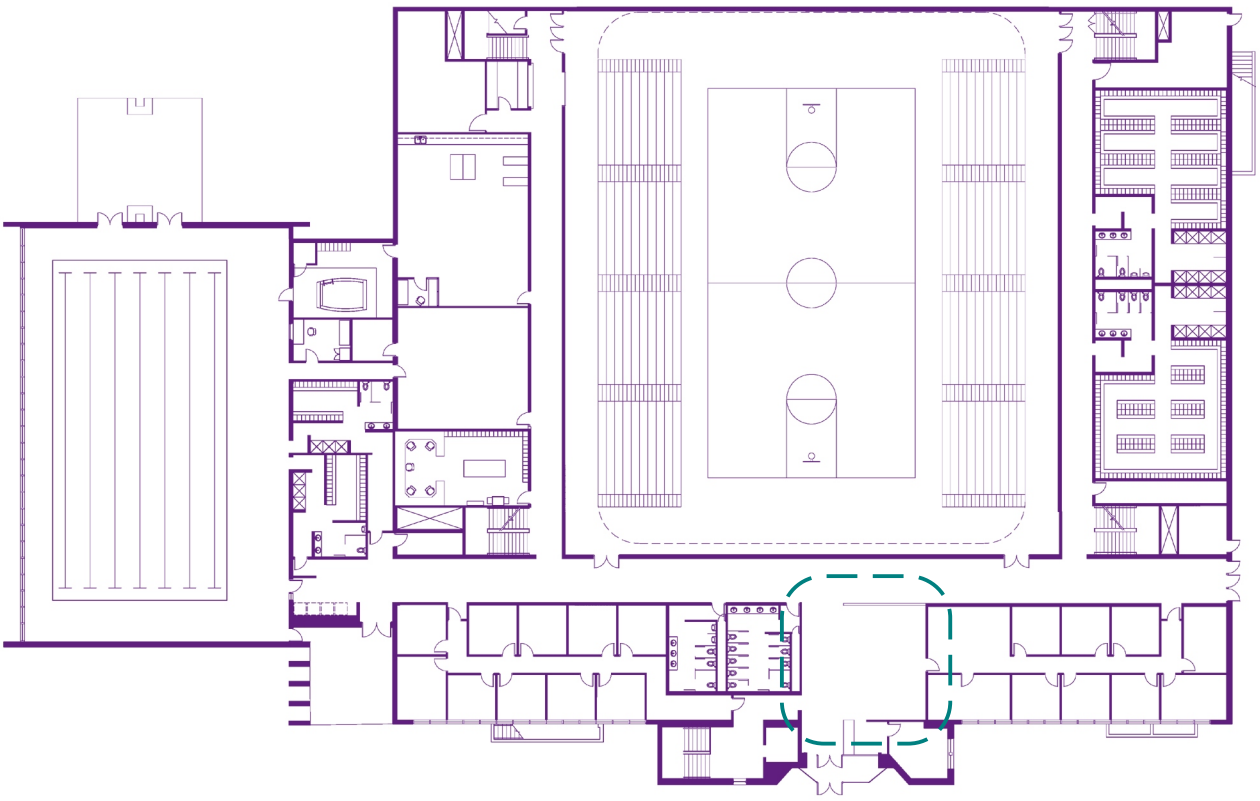
- Fixture Types: Fluorescent w/ electronic ballast
- Foot Candles: 75 / 30
- VCP: 70
- Controls: Auto sensor

Equipment (NIC)

- Capacity for desktop computer: (3)
- Capacity for laser printer: (1 to 2)
- Capacity for fax machine, copier, scanner, laminating equipment, and mailing equipment

SWENSON GYMNASIUM MASTER PLAN

RELATED LOCATION DRAWING



STUDENT LOUNGE / STUDY

Architectural Requirements

Space Summary

- Space Type: Open Lounge & Study Area
- Area Required: As shown on plans
- Location: Main Level

Finishes

- Floor: Static-free carpet
- Walls: Painted gypsum board w/ chair rail
- Ceiling: Susp. 2x2 acoustical ceiling panels
- Sound: None required

Ceiling Height

- Above Finish Floor (min.): 9'-0"

Doors

- None required

Casework / Fixed Equipment

- None required

Furnishings

- Upholstered 3-Seat sofa: (4) 30"x84"
- Upholstered lounge chair w/ arms: (8) 29"x30"
- Wood side table: (4) 30"x30"
- Waste can: (2) 14" diameter

Technical Requirement

Mechanical

- Outdoor Air: 20 CFM / person (min.)
- Air Circulation: 20 CFM / person (min.)
- Summer Design Temp.: 75° F
- Winter Design Temp.: 72° F
- Controls: DDC individual controls
- Sound Criteria: 30 (NC/RC)
- Special Systems: None required
- Plumbing: None required

Electrical

- Power: One duplex outlet every 12' with at least one per wall (min). Additional capacity for equipment listed.
- Data: Capacity, possible laptop use in waiting area.
- Phone: Capacity, one public phone might be desirable.
- Video: Capacity for future video and audio use.

Lighting

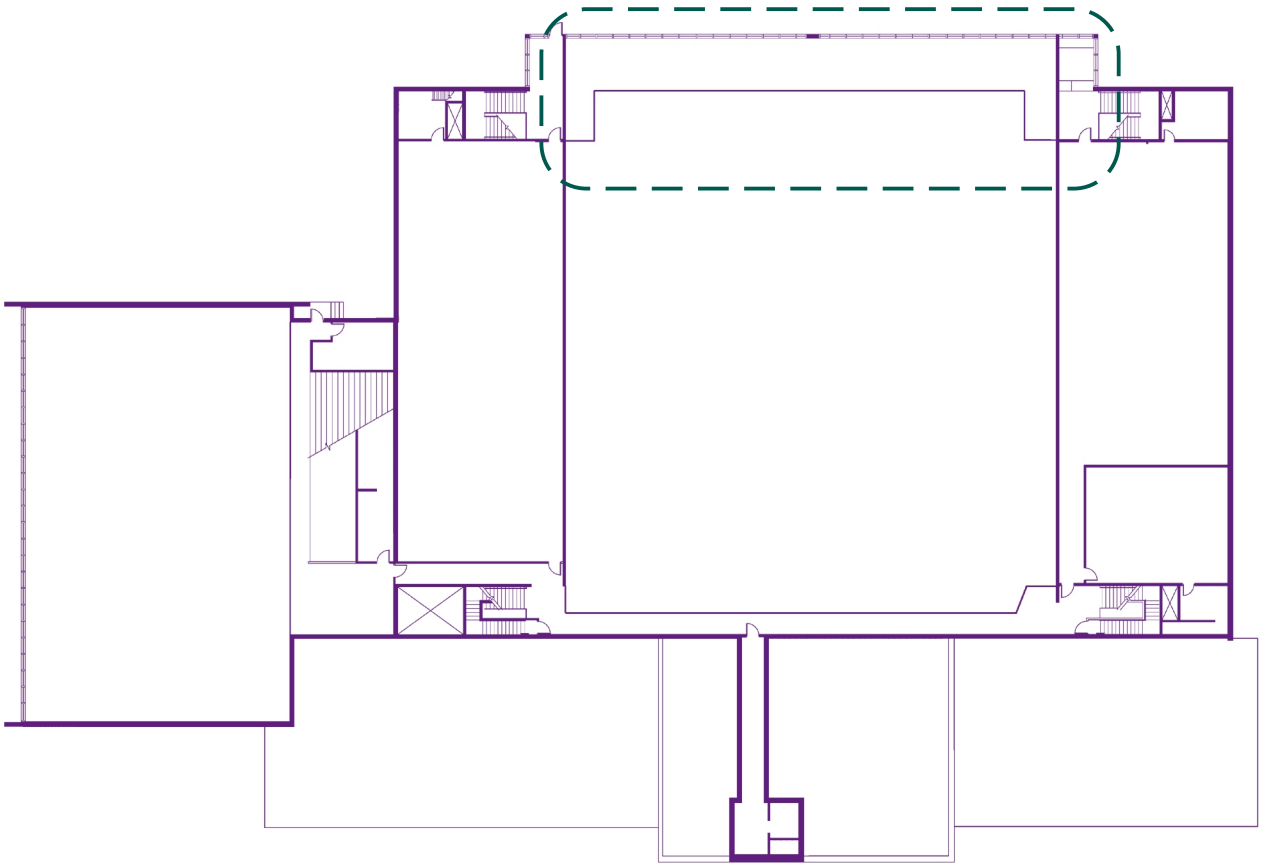
- Fixture Types: Fluorescent w/ electronic ballast
- Table Lamps: Minimum, one at each end table
- Foot Candles: 75
- VCP: 70
- Controls: None required

Equipment (NIC)

- Table Lamps: (4) each

SWENSON GYMNASIUM MASTER PLAN

RELATED LOCATION DRAWING



BALCONY WORK-OUT AREA

Architectural Requirements

Space Summary
- Space Type: Open Area
- Area Required: As shown on plans
- Location: Balcony

Finishes
- Floor: Sealed concrete
- Walls: Re-painted existing walls
- Ceiling: None required
- Sound: None required

Ceiling Height
- Open to structure above: Height varies

Doors
- Type: Solid core wood w/ clear finish
- Frame: Painted hollow metal w/ glazed sidelight
- Special: None required

Casework / Fixed Equipment
- None required.

Furnishings
- None required.

Technical Requirement

Mechanical
- Refer to previous *Total Facility Building Analysis* mechanical section for gymnasium requirements.

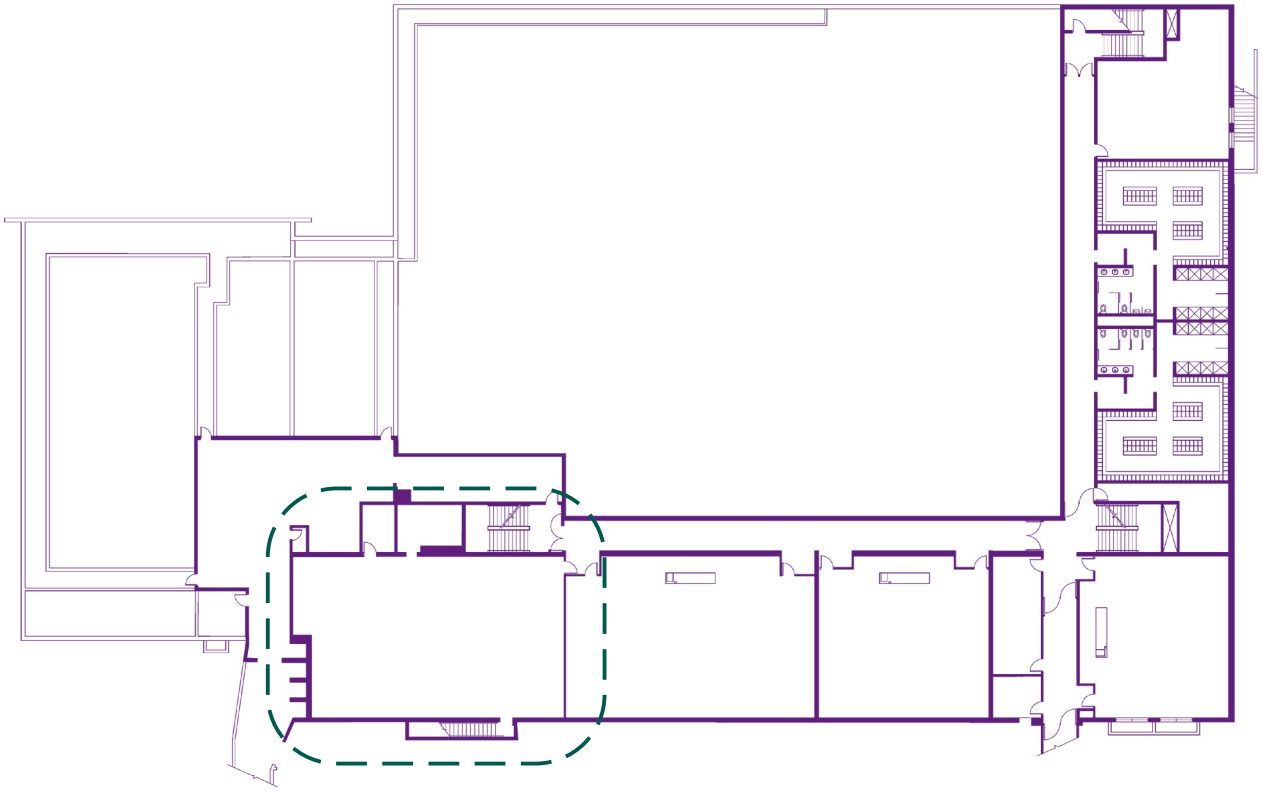
Electrical
- Power: One duplex outlet every 12' with at least one per wall (min.). Additional capacity for equipment listed.
- Data: Capacity for one desktop computer (min.). Additional equipment as listed.
- Phone: Minimum one.
- Video: Capacity for future video and audio use.

Lighting
- Fixture Types: Fluorescent w/ electronic ballast
- Foot Candles: 75 / 30
- VCP: 70
- Controls: Auto sensor

Equipment (NIC)
- Various exercise equipment.

SWENSON GYMNASIUM MASTER PLAN

RELATED LOCATION DRAWING



EXISTING DANCE STUDIO

Architectural Requirements

Space Summary

- Space Type: Instructional Lab
- Area Required: As shown on plans
- Location: Lower Level A

Finishes

- Floor: Refinish existing wood floor
- Walls: Re-painted existing gypsum board
- Ceiling: Susp. 2x2 acoustical ceiling panels
- Sound: Full sound construction

Ceiling Height

- Above Finish Floor (min.): 10'-0"

Doors

- Type: Solid core wood w/ clear finish
- Frame: Painted hollow metal w/ glazed sidelight
- Special: Sound isolation

Casework / Fixed Equipment

- Whiteboard: (1) 144"x48" w/ frame, map rail and tray
- Tack board / tack surface: (2) 36"x48"
- Clock linked to master campus system: (1)
- Monitor/projector mounts/ports & cable

Furnishings

- Waste can: (2) 14" diameter

Technical Requirement

Mechanical

- Outdoor Air: 15 CFM / person (min.)
- Air Circulation: 20 CFM / person (min.)
- Exhaust: For range hood
- Summer Design Temp.: 75° F
- Winter Design Temp.: 72° F
- Controls: DDC individual controls
- Sound Criteria: 30 (NC/RC)
- Equipment Load: N7.5 (225 watts/station)
- Plumbing: None required

Electrical

- Power: One duplex outlet every 12', with at least one per wall on side walls, two per wall at front and rear (min.). Additional capacity for equipment listed.
- Data: Capacity for one laptop computer at each student station and console (min.). Additional equipment as listed.
- Phone: Capacity for future conversion to other uses.
- Video: Capacity for future video and audio use.

Lighting

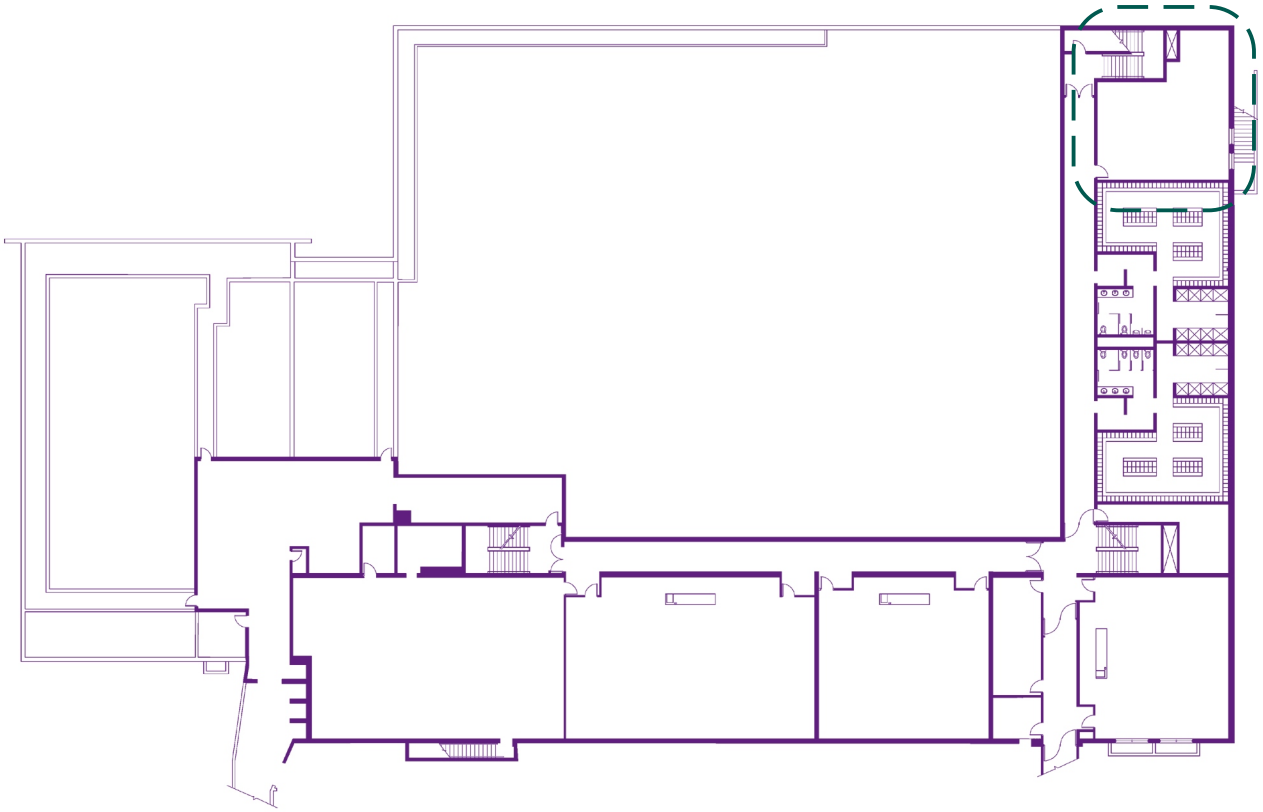
- Fixture Types: Low glare T-8 fluorescent w/ electronic ballast
- Task Light: None required
- Foot Candles: 75 / 30, 10-15 at whiteboard
- VCP: 70
- Controls: Occupancy sensors

Equipment (NIC)

- Capacity for:
  video monitors; overhead, opaque, slide and film projectors; audio devices; computer printer.
- Sound system

SWENSON GYMNASIUM MASTER PLAN

RELATED LOCATION DRAWING



EXISTING NUTRITION CLASSROOM

Architectural Requirements

Space Summary

- Space Type: Instruction Lab
- Area Required: As shown on plans
- Location: Lower Level A

Finishes

- Floor: Carpet/Ceramic Tile
- Walls: Painted gypsum board w/ chair rail
- Ceiling: Susp. 2x2 acoustical ceiling panels
- Sound: Full sound construction

Ceiling Height

- Above Finish Floor (min.): 10'-0"

Doors

- Type: Solid core wood w/ clear finish
- Frame: Painted hollow metal w/ glazed sidelight
- Special: Sound isolation

Casework / Fixed Equipment

- Instructor console w/ podium: (1) 36"x96" capacity for data and media use
- Base cabinet: (15 lf) 24"x36"h w/ laminate work surface, lockable doors & adjustable shelving
- Wall mounted cabinet: (15 lf) 12"x24"h above base units w/ lockable doors & adjustable shelving
- Storage cabinet: (1) 48"x24"x84"h w/ lockable doors & adjustable shelving
- Whiteboard: (1) 144"x48" w/ frame, map rail and tray
- Tack board / tack surface: (2) 36"x48"
- Clock linked to master campus system: (1)
- Monitor/projector mounts/ports & cable connections

Furnishings

- Student table: (as required) 20"x36"
- Task chair: (as requiree) 23"x20" armless, swivel, adjustable
- Waste can: (2) 14" diameter

Technical Requirement

Mechanical

- Outdoor Air: 15 CFM / person (min.)
- Air Circulation: 20 CFM / person (min.)
- Exhaust: For range hood
- Summer Design Temp.: 75° F
- Winter Design Temp.: 72° F
- Controls: DDC individual controls
- Sound Criteria: 30 (NC/RC)
- Equipment Load: N7.5 (225 watts/station)
- Plumbing: Sink, water lines for dishwasher & refrigerator

Electrical

- Power: One duplex outlet every 12', with at least one per wall on side walls, two per wall at front and rear (min.). Additional capacity for equipment listed.
- Data: Capacity for one laptop computer at each student station and console (min.). Additional equipment as listed.
- Phone: Capacity for future conversion to other uses.
- Video: Capacity for future video and audio use.

Lighting

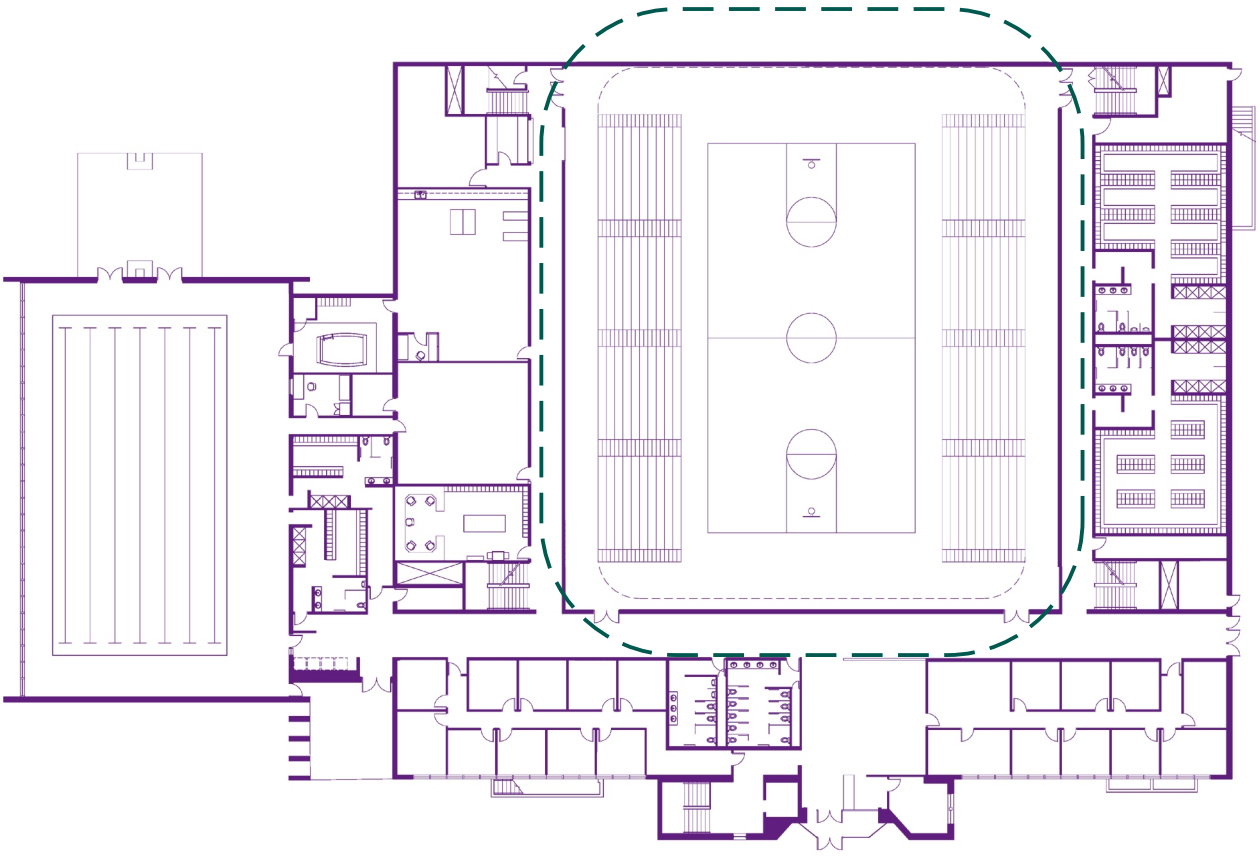
- Fixture Types: Low glare T-8 fluorescent w/ electronic ballast
- Task Light: Required at console
- Foot Candles: 75 / 30, 10-15 at whiteboard
- VCP: 70
- Controls: Occupancy sensors Dimming capability at console

Equipment (NIC)

- Elmo desktop presentation unit: (1) 14"x12"x6"
- Residential dishwasher, cook-top, range hood, oven, microwave, refrigerator
- Capacity for:
  video monitors; overhead, opaque, slide and film projectors; audio devices; computer printer; small kitchen appliances

SWENSON GYMNASIUM MASTER PLAN

RELATED LOCATION DRAWING



EXISTING GYMNASIUM

Architectural Requirements

Space Summary

- Space Type: Gymnasium
- Area Required: As shown on plans
- Location: Main Level

Finishes

- Floor: Repair soft spots, refinish & restripe
- Walls: Existing to be repainted
- Ceiling: None required
- Sound: None required

Ceiling Height

- Open to structure above: Height varies

Doors

- Type: Solid core wood w/ clear finish
- Frame: Painted hollow metal
- Special: Magnetic hold open on main exit doors

Casework / Fixed Equipment

- Sleeves for standards: 5 sets

Furnishings

- None required.

Technical Requirement

Mechanical

- Refer to previous *Total Facility Building Analysis* mechanical section for gymnasium requirements.

Electrical

- Refer to previous *Total Facility Building Analysis* electrical section for gymnasium requirements.

Lighting

- Refer to previous *Total Facility Building Analysis* electrical section for gymnasium requirements.

Equipment (NIC)

- Motorized bleachers: 1,000 seat
- Suspended, motorized backstops: (4)
- Portable, cantilevered backstops: (2) w/ electronic shot clock.
- Volleyball standards & net: 2 sets
- Badminton standards & net: 2 sets
- Sound system

SWENSON GYMNASIUM MASTER PLAN

RELATED LOCATION DRAWING

EXISTING SWIMMING POOL

Architectural Requirements

Space Summary

- Space Type: Enclosed Swimming Pool
- Area Required: As shown on plans
- Location: Main Level

Finishes

- Floor: Ceramic mosaic tile
- Walls: Existing to be repainted w/ epoxy paint
- Ceiling: None required
- Sound: None required

Ceiling Height

- Open to structure above: Height varies

Doors

- Type: Solid core wood w/ clear finish
- Frame: Painted hollow metal
- Special: None required

Casework / Fixed Equipment

- None required.

Furnishings

- None required.

Technical Requirement

Mechanical

- Refer to previous *Total Facility Building Analysis* mechanical section for pool requirements.

Electrical

- Refer to previous *Total Facility Building Analysis* electrical section for pool requirements.

Lighting

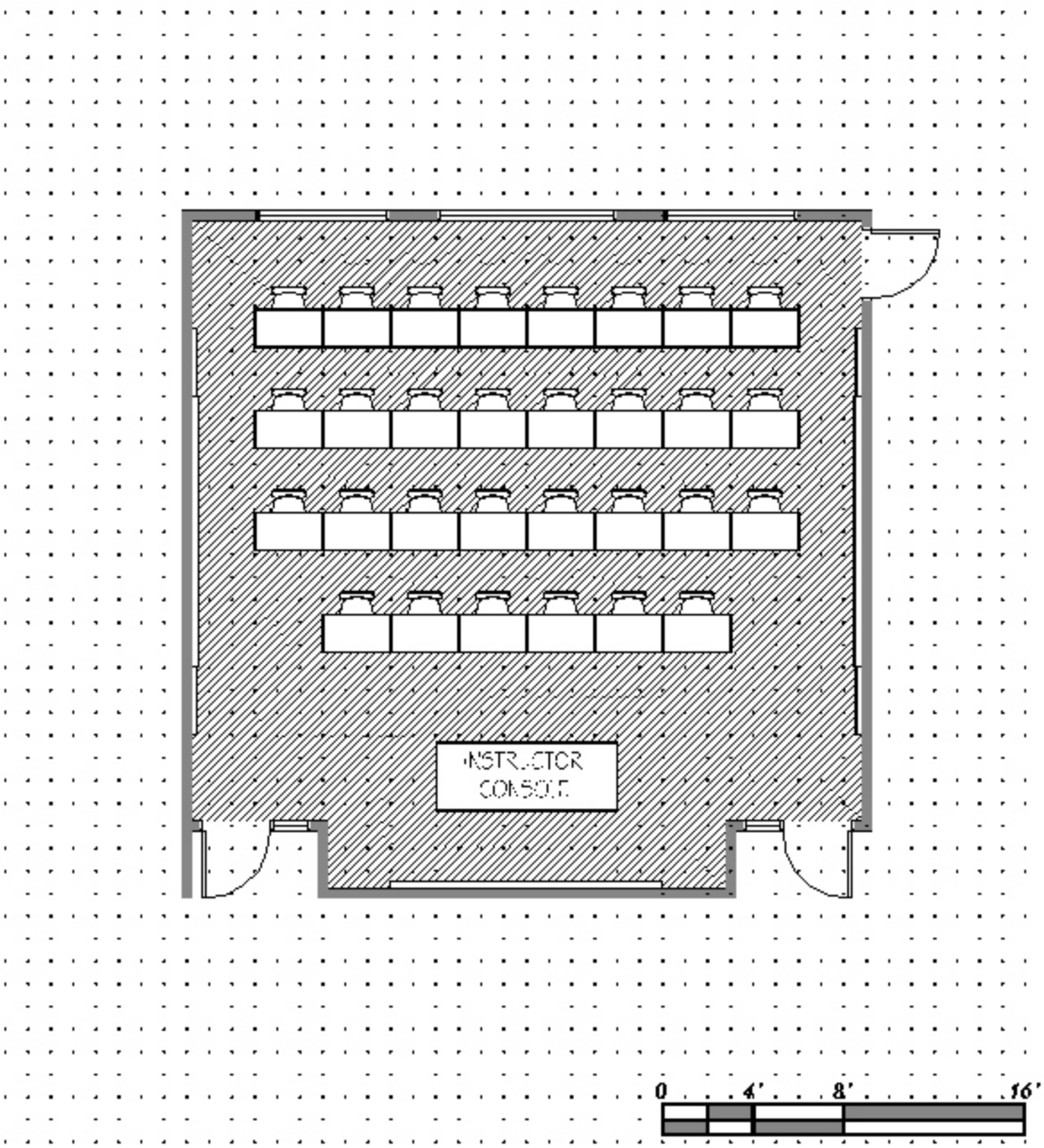
- Refer to previous *Total Facility Building Analysis* electrical section for pool requirements.

Equipment (NIC)

- None required.

SWENSON GYMNASIUM MASTER PLAN

TYPICAL CLASSROOM DIAGRAM



CLASSROOMS

Architectural Requirements

Space Summary

- Space Type: Enclosed Classroom
- Area Required: As shown on plans
- Locations: (1) Lower Level B
  (3) Lower Level A
  (1) Main Level
  (1) Balcony Level

Finishes

- Floor: Carpet
- Walls: Painted gypsum board w/ chair rail
- Ceiling: Susp. 2x2 acoustical ceiling panels
- Sound: Full sound construction

Ceiling Height

- Above Finish Floor (min.): 10'-0"

Doors

- Type: Solid core wood w/ clear finish
- Frame: Painted hollow metal w/ glazed sidelight
- Special: Sound isolation

Casework / Fixed Equipment

- Instructor console w/ podium: (1) 36"x96"
  capacity for data and media use
- Whiteboard: (3) 144"x48"
  w/ frame, map rail and tray
- Tack board / tack surface: (4) 36"x48"
- Clock linked to master campus system: (1)
- Monitor/projector mounts/ports & cable connections

Furnishings

- Student table: (as required) 20"x36"
- Task chair, armless,: (as required) 23"x20"
  swivel, adjustable
- Waste can: (2) 14" diameter

Technical Requirement

Mechanical

- Outdoor Air: 15 CFM / person (min.)
- Air Circulation: 20 CFM / person (min.)
- Summer Design Temp.: 75° F
- Winter Design Temp.: 72° F
- Controls: DDC individual controls
- Sound Criteria: 30 (NC/RC)
- Equipment Load: N7.5 (225 watts/station)
- Plumbing: None required

Electrical

- Power: One duplex outlet every 12', with at least one per wall on side walls, two per wall at front and rear (min.). Additional capacity for equipment listed.
- Data: Capacity for one laptop computer at each student station and console (min.). Additional equipment as listed.
- Phone: Capacity for future conversion to other uses.
- Video: Capacity for future video and audio use.

Lighting

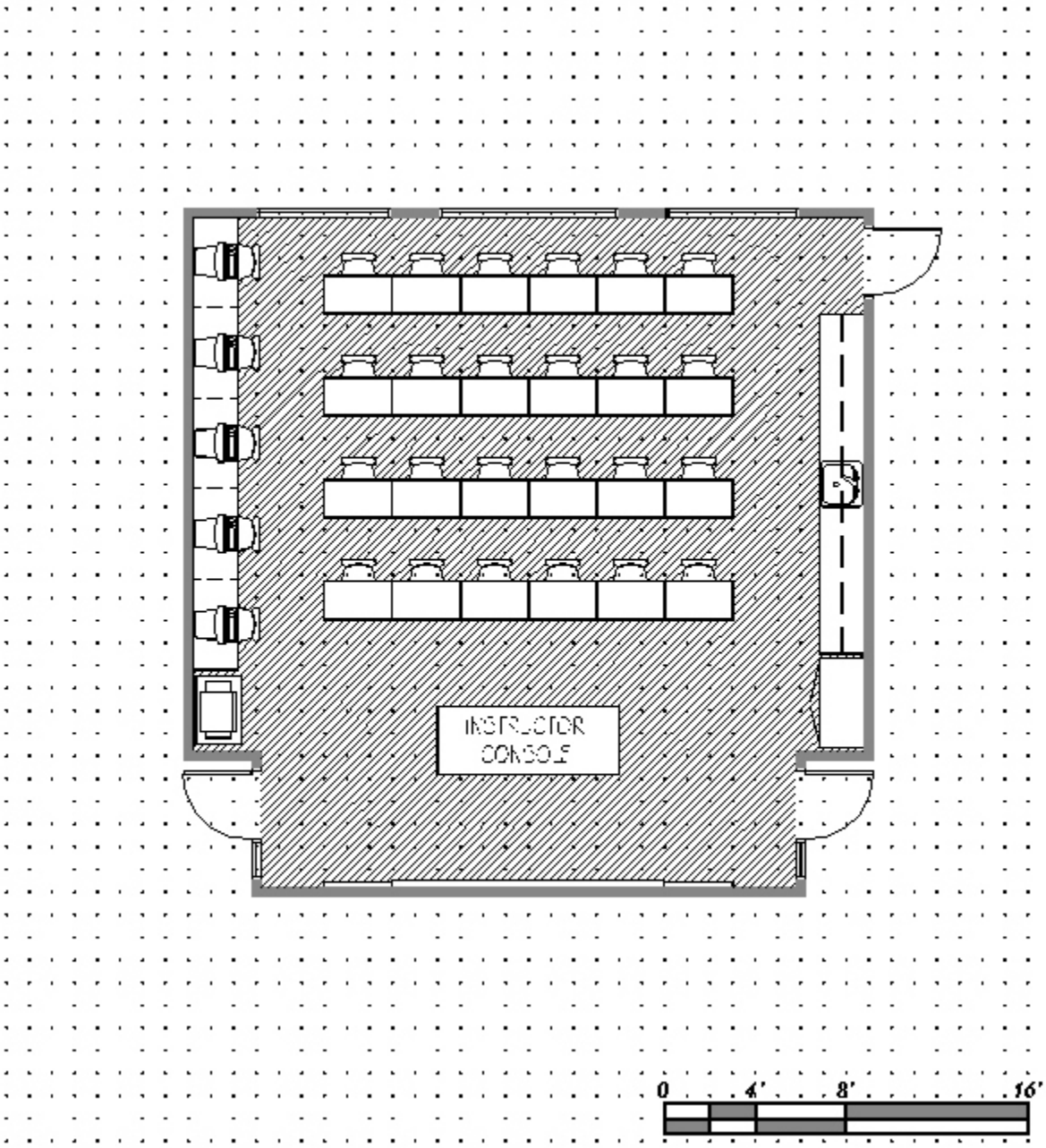
- Fixture Types: Low glare T-8 fluorescent w/ electronic ballast
- Task Light: Required at console
- Foot Candles: 75 / 30, 10-15 at whiteboard
- VCP: 70
- Controls: Occupancy sensors
  Dimming capability at console

Equipment (NIC)

- Elmo desktop presentation unit: (1) 14"x12"x6"
- Capacity for:
  video monitors; overhead, opaque, slide and film projectors; audio devices; computer printer.

SWENSON GYMNASIUM MASTER PLAN

TYPICAL INSTRUCTIONAL LAB DIAGRAM



INSTRUCTIONAL LABS

Architectural Requirements

Space Summary

- Space Type: Enclosed Classroom
- Area Required: As shown on plans
- Locations: (1) Lower Level B
  (2) Balcony Level
  High Performance/Fitness Center & Physical Education/Leisure Area

Finishes

- Floor: Carpet/Ceramic Tile
- Walls: Painted gypsum board w/ chair rail
- Ceiling: Susp. 2x2 acoustical ceiling panels
- Sound: Full sound construction

Ceiling Height

- Above Finish Floor (min.): 10'-0"

Doors

- Type: Solid core wood w/ clear finish
- Frame: Painted hollow metal w/ glazed sidelight
- Special: Sound isolation

Casework / Fixed Equipment

- Instructor console w/ podium: (1) 36"x96" capacity for data and media use
- Custom work counter: (5) 24"x48"x30"h workstations w/ keyboard shelf
- Base cabinet: (15 lf) 24"x36"h w/ laminate work surface, lockable doors & adjustable shelving
- Wall mounted cabinet: (15 lf) 12"x24"h above base units w/ lockable doors & adjustable shelving
- Storage cabinet: (1) 48"x24"x84"h w/ lockable doors & adjustable shelving
- Whiteboard: (1) 144"x48" w/ frame, map rail and tray
- Tack board / tack surface: (2) 36"x48"
- Clock linked to master campus system: (1)
- Monitor/projector mounts/ports & cable connections

Furnishings

- Student table: (as required) 20"x36"
- Task chair: (as requiree) 23"x20" armless, swivel, adjustable
- Waste can: (2) 14" diameter

Technical Requirement

Mechanical

- Outdoor Air: 15 CFM / person (min.)
- Air Circulation: 20 CFM / person (min.)
- Summer Design Temp.: 75° F
- Winter Design Temp.: 72° F
- Controls: DDC individual controls
- Sound Criteria: 30 (NC/RC)
- Equipment Load: N7.5 (225 watts/station)
- Plumbing: Sink

Electrical

- Power: One duplex outlet every 12', with at least one per wall on side walls, two per wall at front and rear (min.). Additional capacity for equipment listed.
- Data: Capacity for one laptop computer at each student station and console (min.). Additional equipment as listed.
- Phone: Capacity for future conversion to other uses.
- Video: Capacity for future video and audio use.

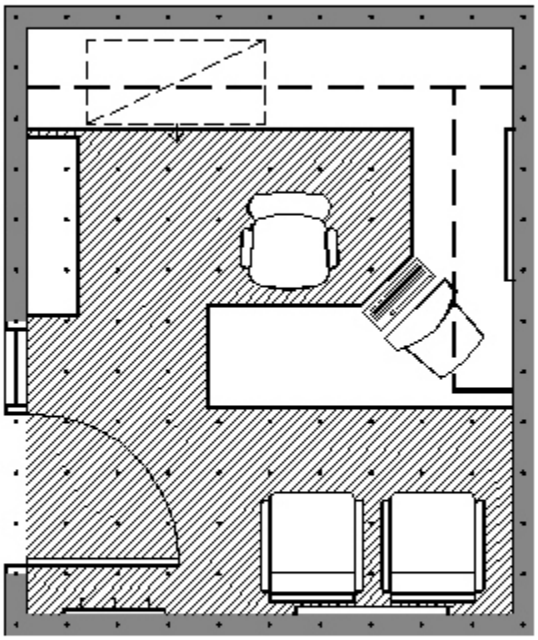
Lighting

- Fixture Types: Low glare T-8 fluorescent w/ electronic ballast
- Task Light: Required at console
- Foot Candles: 75 / 30, 10-15 at whiteboard
- VCP: 70
- Controls: Occupancy sensors
  Dimming capability at console

Equipment (NIC)

- Elmo desktop presentation unit: (1) 14"x12"x6"
- Capacity for:
  video monitors; overhead, opaque, slide and film projectors; audio devices; computer printer.

TYPICAL OFFICE DIAGRAM



OFFICES

Architectural Requirements

Space Summary

- Space Type: Private Office
- Area Required: As shown on plans
- Locations: (2) Lower Level B *(Issue Room)*
  (2) Lower Level A
  (19) Main Level *(First-Aid Office)*

Finishes

- Floor: Static-free carpet
- Walls: Painted gypsum board
- Ceiling: Susp. 2x4 acoustical ceiling panels
- Sound: None required

Ceiling Height

- Above Finish Floor (min.): 8'-0"

Doors

- Type: Solid core wood w/ clear finish
- Frame: Painted hollow metal w/ glazed sidelight
- Special: None required

Casework / Fixed Equipment

- Coat Rack: 18"x6"x3/4" oak plate w/ 2 dbl-prong hooks
- Whiteboard w/ frame and tray: (1) 48"x48"

Furnishings

- Work surface: (1) 24"x60" and (1) 24"x78"
- Work surface, angled corner: (1) 24"x36"
- Work/table surface w/ rounded end: (1) 24"x36"
- Work station shelf unit: (2) 14"x48" 2-shelves high
- Work station shelf unit: (1) 14"x42" 6-shelves high
- Work station binder bin: (2) 15"x36" w/ lockable door
- Work station keyboard shelf: (1) pull-out
- Work station tack surface: (1) 24"x36"
- 2-Drawer lateral file: (1) 18"x42"
- Task chair: (1) 27"x28" w/ arms, swivel, adjustable
- Upholstered side chair w/ arms: (2) 24"x24"
- Waste can: (1) 14" diameter

Technical Requirement

Mechanical

- Outdoor Air: 20 CFM / person (min.)
- Air Circulation: 20 CFM / person (min.)
- Summer Design Temp.: 75° F
- Winter Design Temp.: 72° F
- Controls: DDC individual controls
- Sound Criteria: 30 (NC/RC)
- Special Systems: None required
- Plumbing: None required

Electrical

- Power: One duplex outlet every 12' with at least one per wall (min.).
  Additional capacity for equipment listed.
- Data: Capacity for one desktop computer (min.).
  Additional equipment as listed.
- Phone: Minimum one.
- Video: Capacity for future video and audio use.

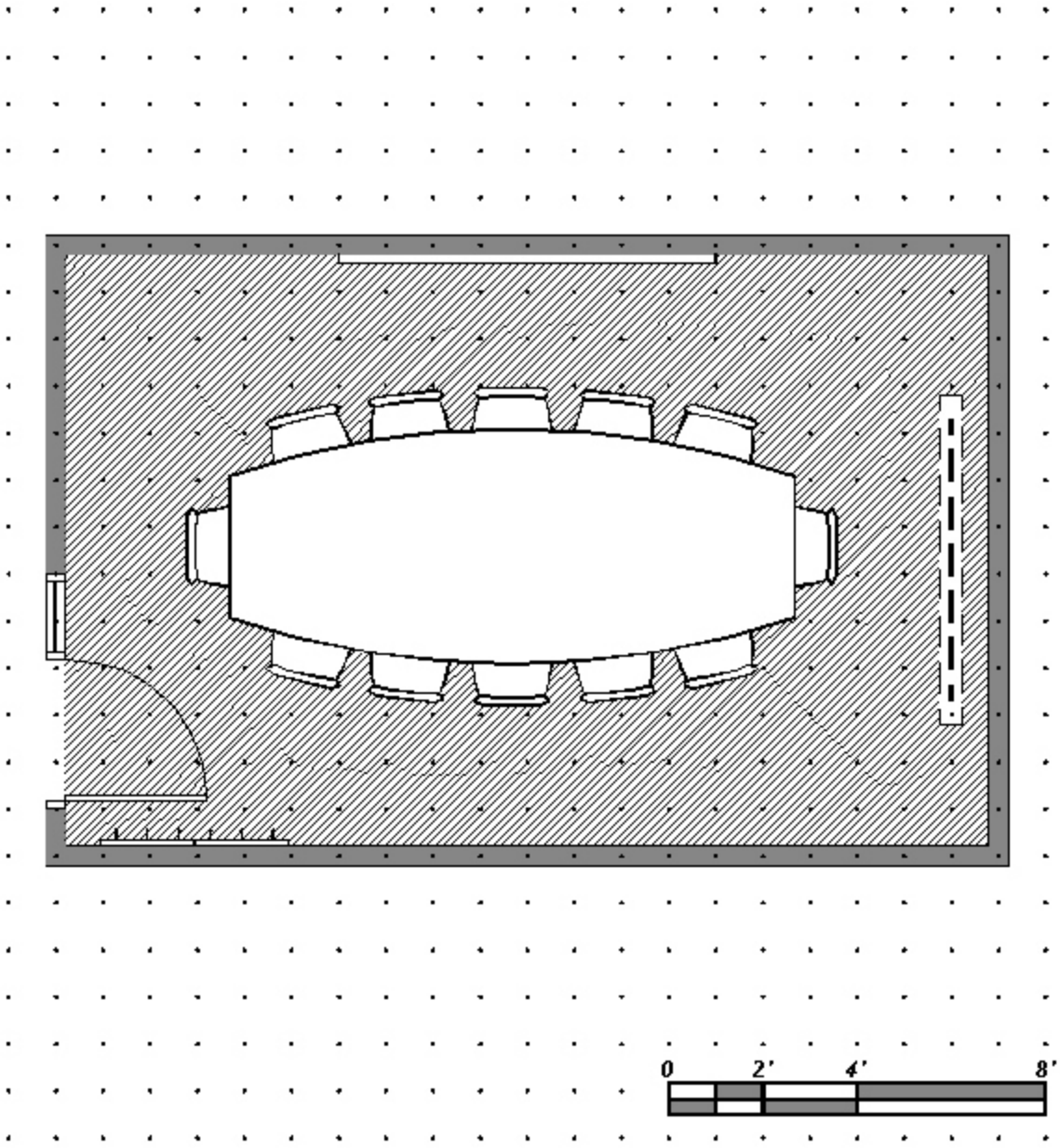
Lighting

- Fixture Types: Fluorescent w/ electronic ballast
- Task Light: Required at all work surfaces
- Foot Candles: 75 / 30
- VCP: 70
- Controls: Auto sensor

Equipment (NIC)

- Desktop computer and laser printer.

TYPICAL CONFERENCE ROOM DIAGRAM



CONFERENCE ROOMS

Architectural Requirements

Space Summary

- Space Type: Enclosed Meeting Room
- Area Required: As shown on plans
- Locations: (1) Lower Level A
  (1) Main Level

Finishes

- Floor: Static-free carpet
- Walls: Painted gypsum board w/ chair rail
- Ceiling: Susp. 2x2 acoustical ceiling panels
- Sound: Full sound construction

Ceiling Height

- Above Finish Floor (min.): Bi-level 10'-0" / 8'-0"

Doors

- Type: Solid core wood w/ clear finish
- Frame: Painted hollow metal w/ glazed sidelight
- Special: Sound isolation

Casework / Fixed Equipment

- Whiteboard: (1) 48"x96"
  w/ alum. frame, map rail and tray
- Motorized, recessed projection screen: (1) 72"w
- Coat Rack: 36"x6"x3/4" oak plate
  w/ 6 dbl-prong hooks

Furnishings

- Wood conference table, boat top: (1) 60"x12'-0"
- Upholstered conference chair: (12) 20"x20"
  w/o arms
- Waste can: (1) 14" diameter

Technical Requirement

Mechanical

- Outdoor Air: 20 CFM / person (min.)
- Air Circulation: 20 CFM / person (min.)
- Summer Design Temp.: 75° F
- Winter Design Temp.: 72° F
- Controls: DDC individual controls
- Sound Criteria: 30 (NC/RC)
- Special Systems: None required
- Plumbing: None required

Electrical

- Power: One duplex outlet every 12' with at least one per wall (min.).
  Motorized projection screen.
  Additional capacity for equipment listed.
- Data: Capacity for one desktop computer (min.).
  Additional equipment as listed.
- Phone: Minimum one.
- Video: Capacity for future video and audio use.

Lighting

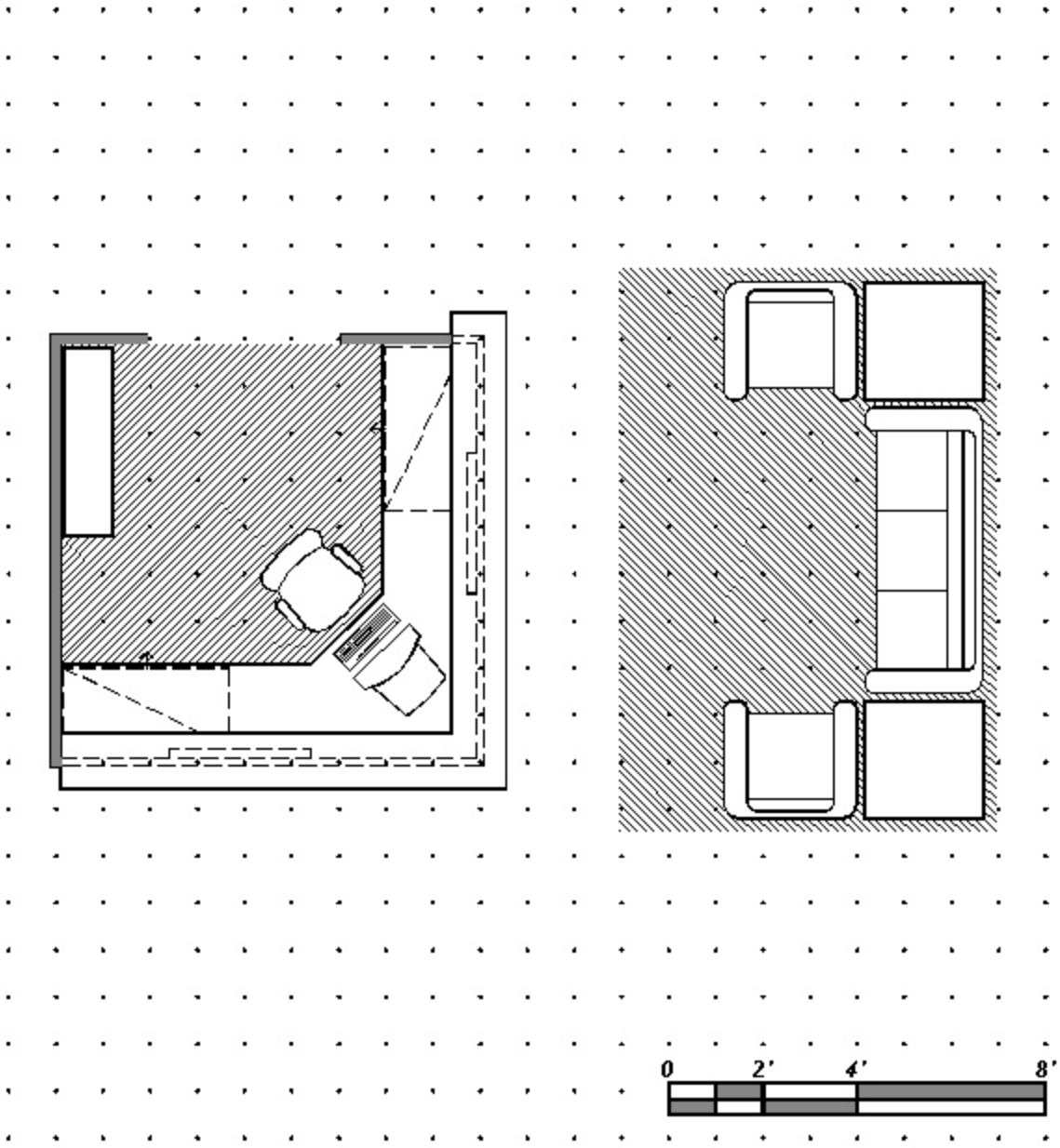
- Fixture Types: Fluorescent w/ electronic ballast
- Accent Lighting: Incandescent
- Foot Candles: 75 / 30
- VCP: 70
- Controls: Auto sensor w/ switch override
  Dimming capability

Equipment (NIC)

- Desktop computer and laser printer.
- Capacity for up to 12 laptop computers.
- Capacity for two-way video camera and microphone for teleconferencing.
- Capacity for LCD projector.

SWENSON GYMNASIUM MASTER PLAN

TYPICAL RECEPTION / WAITING AREA DIAGRAM



RECEPTION / WAITING AREA

Architectural Requirements

Space Summary
- Space Type: Open Reception and Waiting Area
- Area Required: As shown on plans
- Location: (1) Main Level

Finishes
- Floor: Static-free carpet
- Walls: Painted gypsum board w/ chair rail
- Ceiling: Susp. 2x2 acoustical ceiling panels
- Sound: None required

Ceiling Height
- Above Finish Floor (min.): 9'-0"

Doors
- None required

Casework / Fixed Equipment
- None required

Furnishings
- Upholstered 3-Seat sofa: (1) 30"x84"
- Upholstered lounge chair w/ arms: (2) 29"x30"
- Wood side table: (2) 30"x30"
- Waste can: (1) 14" diameter

Technical Requirement

Mechanical
- Outdoor Air: 20 CFM / person (min.)
- Air Circulation: 20 CFM / person (min.)
- Summer Design Temp.: 75° F
- Winter Design Temp.: 72° F
- Controls: DDC individual controls
- Sound Criteria: 30 (NC/RC)
- Special Systems: None required
- Plumbing: None required

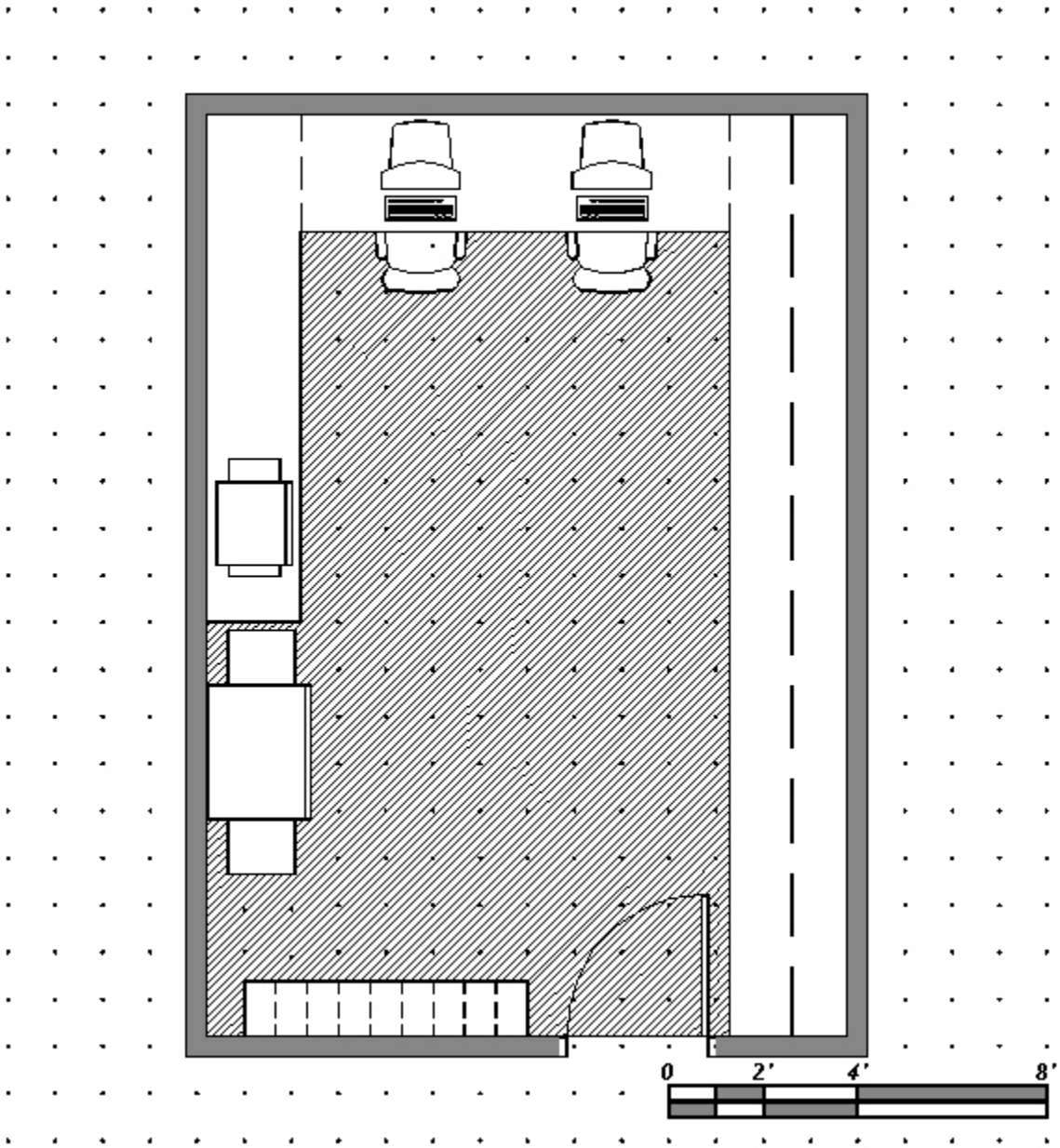
Electrical
- Power: One duplex outlet every 12' with at least one per wall (min).
  Additional capacity for equipment listed.
- Data: Capacity, possible laptop use in waiting area.
- Phone: Capacity, one public phone might be desirable.
- Video: Capacity for future video and audio use.

Lighting
- Fixture Types: Fluorescent w/ electronic ballast
- Table Lamps: Minimum, one at each end table
- Foot Candles: 75
- VCP: 70
- Controls: None required

Equipment (NIC)
- Table Lamps: (2) each

SWENSON GYMNASIUM MASTER PLAN

TYPICAL COPY / WORK ROOM DIAGRAM



COPY / WORK ROOMS

Architectural Requirements

Space Summary
- Space Type: Enclosed Work/Storage Room
- Area Required: As shown on plans
- Location: (1) Main Level

Finishes
- Floor: Vinyl tile
- Walls: Painted gypsum board
- Ceiling: Susp. 2x4 acoustical ceiling panels
- Sound: None required

Ceiling Height
- Above Finish Floor (min.): 8'-0"

Doors
- Type: Solid core wood w/ clear finish
- Frame: Painted hollow metal
- Special: None required

Casework / Fixed Equipment
- Base cabinet: (20 lf) 24"x36"h
  w/ laminate work surface,
  lockable doors & adjustable shelving
- Wall mounted cabinet: (20 lf) 12"x24"h
  above base units
  w/ lockable doors & adjustable shelving
- Open mail bins: (40) 12"x18"x6"
- Tack board / tack surface: (1) 48"x24"

Furnishings
- Waste and recycling containers: (2)

Technical Requirement

Mechanical
- Outdoor Air: 20 CFM / person (min.)
- Air Circulation: 20 CFM / person (min.)
- Summer Design Temp.: 75° F
- Winter Design Temp.: 72° F
- Controls: DDC individual controls
- Sound Criteria: 30 (NC/RC)
- Special Systems: None required
- Plumbing: None required

Electrical
- Power: One duplex outlet every 12' with at least one per wall (min.).
  One four-plex outlet per person (min.).
  Additional capacity for equipment listed.
- Data: Capacity for one desktop computer at each workstation (min.).
  Additional equipment as listed.
- Phone: Minimum one.
- Video: Capacity for future video and audio use.

Lighting
- Fixture Types: Fluorescent w/ electronic ballast
- Foot Candles: 75 / 30
- VCP: 70
- Controls: Auto sensor

Equipment (NIC)
- Capacity for desktop computer: (3)
- Capacity for laser printer: (1 to 2)
- Capacity for fax machine, copier, scanner, laminating equipment, and mailing equipment

SWENSON GYMNASIUM MASTER PLAN

LOCKER ROOMS

Architectural Requirements

Space Summary

- Space Type: Locker/Shower Restroom
- Area Required: As shown on plans
- Locations: (4) Lower Level B
  (2) Lower Level A
  (2) Main Level

Finishes

- Floor: Ceramic tile, slope to floor drain
- Walls: Ceramic tile
- Ceiling: Susp. gypsum board w/ acoustic tile
- Sound: None required

Ceiling Height

- Above Finish Floor (min.): 8'-0"

Doors

- Type: Solid core wood w/ clear finish
- Frame: Painted hollow metal
- Special: None required

Casework / Fixed Equipment

- Water closet: As required
- Urinal: As required
- Lavatory: As required
  w/ built-in base cabinet and counter.
- Toilet partition: 32"x 56"
- Urinal screen: 24"x18" (min.)
- Mirror: As required
- Shower partition: As required
  w/ shelf mounted over lavatories
- Vanity counter w/ mirror: As required
- Grab bars, ADA compliant: As required
- Dispensers: Per manufacturer.
  for towels, soap, toilet paper, sanitary napkins
- Waste receptacles: As required

Furnishings

- Full height lockers: As required
- Half height lockers: As required

Technical Requirement

Mechanical

- Outdoor Air: 20 CFM / person (min.)
- Air Circulation: 20 CFM / person (min.)
- Exhaust: 5 (min.) air change
- Summer Design Temp.: 78° F
- Winter Design Temp.: 72° F
- Controls: DDC individual controls
- Sound Criteria: 40 (NC/RC)
- Equipment Load: None required
- Plumbing: Water Closets, Urinals, Lavatories
  Showers, Floor Drains

Electrical

- Power: One duplex outlet every 12'
  w/ at least one per wall (min.)
  Additional capacity for equipment listed.
- Data: None required
- Phone: None required
- Video: None required

Lighting

- Fixture Types: Fluorescent w/ electronic ballast
- Task Light: Required at mirrors
- Foot Candles: 30
- VCP: 70
- Controls: Auto sensor

Equipment (NIC)

- Electric blow dryers, hot rollers, curling irons, electric razors

CONCESSION AREAS

Architectural Requirements

Space Summary

- Space Type: Service Counter/Food Service
- Area Required: As shown on plans
- Locations: (1) Main Level
  (1) Balcony Level

Finishes

- Floor: Quarry tile
- Walls: Epoxy painted gypsum board
- Ceiling: Suspended mylar faced ceiling panels
- Sound: None required

Ceiling Height

- Above Finish Floor (min.): 9'-0"

Doors

- Type: Solid core wood w/ clear finish
- Frame: Painted hollow metal
- Special: Overhead roll-down counter door

Casework / Fixed Equipment

- Rear base cabinet: (8 lf) 30"x36"h w/ solid surface work surface, lockable doors & adjustable shelving
- Rear wall mounted cabinet: (8 lf) 14"x24"h above base units w/ lockable doors & adjustable shelving
- Front service counter: (8 lf) 30"x36"h w/ solid surface work surface & adjustable shelving below

Furnishings

- None required.

Technical Requirement

Mechanical

- Outdoor Air: 15 CFM / person (min.)
- Air Circulation: 20 CFM / person (min.)
- Summer Design Temp.: 75° F
- Winter Design Temp.: 72° F
- Controls: DDC individual controls
- Sound Criteria: 30 (NC/RC)
- Equipment Load: N7.5 (225 watts/station)
- Plumbing: Sink, floor sink, water line

Electrical

- Power: One duplex outlet every 12', with at least one per wall on side walls. Additional capacity for equipment listed.
- Data: Capacity for one laptop computer (min.). Additional equipment as listed.
- Phone: Minimum one required..
- Video: None required

Lighting

- Fixture Types: Fluorescent w/ electronic ballast
- Task Light: None required
- Foot Candles: 75 / 30
- VCP: 70
- Controls: Occupancy sensors

Equipment (NIC)

- Cash register, soft drink dispensers, ice maker, popcorn machine, hot dog warmer, pretzel warmer, nacho machine, microwave & other small kitchen appliances.

EXISTING PUBLIC RESTROOMS

Architectural Requirements

Space Summary

- Space Type: Public Restroom
- Area Required: As shown on plans
- Locations: Main Level

Finishes

- Floor: Ceramic tile, slope to floor drain
- Walls: Ceramic tile
- Ceiling: Susp. gypsum board w/ acoustic tile
- Sound: None required

Ceiling Height

- Above Finish Floor (min.): 8'-0"

Doors

- Type: Solid core wood w/ clear finish
- Frame: Painted hollow metal
- Special: None required

Casework / Fixed Equipment

- Water closet: As required
- Urinal: As required
- Lavatory: As required
  w/ built-in base cabinet and counter.
- Toilet partition: 32"x 56"
- Urinal screen: 24"x18" (min.)
- Mirror: As required
  w/ shelf mounted over lavatories
- Grab bars, ADA compliant: As required
- Dispensers: Per manufacturer.
  for towels, soap, toilet paper, sanitary napkins
- Waste receptacles: As required

Furnishings

- None required.

Technical Requirement

Mechanical

- Outdoor Air: 20 CFM / person (min.)
- Air Circulation: 20 CFM / person (min.)
- Exhaust: 5 (min.) air change
- Summer Design Temp.: 78° F
- Winter Design Temp.: 72° F
- Controls: DDC individual controls
- Sound Criteria: 40 (NC/RC)
- Equipment Load: None required
- Plumbing: Water closet, Urinal, Lavatory
  Floor drain

Electrical

- Power: One duplex outlet every 12'
  w/ at least one per wall (min.)
- Data: None required
- Phone: None required
- Video: None required

Lighting

- Fixture Types: Fluorescent w/ electronic ballast
- Task Light: Required at mirrors
- Foot Candles: 30
- VCP: 70
- Controls: Auto sensor

Equipment (NIC)

- None required

STORAGE ROOMS

Architectural Requirements

Space Summary

- Space Type: Enclosed storage
- Area Required: As shown on plans
- Locations: (1) Lower Level B
  (1) Lower Level A
  (4) Main Level
  (1) Balcony Level

Finishes

- Floor: Sealed concrete
- Walls: Painted gypsum board
- Ceiling: Suspended painted gypsum board
- Sound: None required

Ceiling Height

- Above Finish Floor (min.): 8'-0"

Doors

- Type: Solid core wood w/ clear finish
- Frame: Painted hollow metal
- Special: None required

Casework / Fixed Equipment

- Base cabinet: (11 lf) 24"x36"h
  w/ laminate work surface,
  w/ lockable doors & adjustable shelving
- Wall mounted cabinet: (11 lf) 12"x24"h
  above base units
- Wood shelving, edge banded: (28 lf) 12"
  w/ heavy-duty brackets at 16" o.c.,
  adjustable, seven shelves

Furnishings

- None required.

Technical Requirement

Mechanical

- Outdoor Air: 20 CFM / person (min.)
- Air Circulation: 20 CFM / person (min.)
- Summer Design Temp.: 75° F
- Winter Design Temp.: 72° F
- Controls: DDC individual controls
- Sound Criteria: 30 (NC/RC)
- Special Systems: None required
- Plumbing: None required

Electrical

- Power: One duplex outlet every 12' with at least one per wall (min.).
- Data: Capacity for other uses of space in future.
- Phone: Capacity for other uses of space in future.
- Video: Capacity for future video and audio use.

Lighting

- Fixture Types: Fluorescent w/ electronic ballast
- Task Light: None required
- Foot Candles: 30
- VCP: 70
- Controls: Auto sensor

Equipment (NIC)

- None required

EXISTING LAUNDRY ROOM

Architectural Requirements

Space Summary

- Space Type: Enclosed storage
- Area Required: As shown on plans
- Location: Lower Level A

Finishes

- Floor: Sealed concrete
- Walls: Painted existing walls
- Ceiling: Open to structure
- Sound: None required

Ceiling Height

- Above Finish Floor (min.): Varies

Doors

- Type: Solid core wood w/ clear finish
- Frame: Painted hollow metal
- Special: None required

Casework / Fixed Equipment

- Base cabinet: (11 lf) 24"x36"h w/ laminate work surface, w/ lockable doors & adjustable shelving
- Wall mounted cabinet: (11 lf) 12"x24"h above base units
- Wood shelving, edge banded: (28 lf) 12" w/ heavy-duty brackets at 16" o.c., adjustable, seven shelves

Furnishings

- None required.

Technical Requirement

Mechanical

- Outdoor Air: 20 CFM / person (min.)
- Air Circulation: 20 CFM / person (min.)
- Summer Design Temp.: 75° F
- Winter Design Temp.: 72° F
- Controls: DDC individual controls
- Sound Criteria: 30 (NC/RC)
- Special Systems: None required
- Plumbing: None required

Electrical

- Power: One duplex outlet every 12' with at least one per wall (min.). Additional capacity for equipment listed
- Data: None required
- Phone: Capacity for one (min.)
- Video: None required

Lighting

- Fixture Types: Fluorescent w/ electronic ballast
- Task Light: None required
- Foot Candles: 30
- VCP: 70
- Controls: Auto sensor

Equipment (NIC)

- Commercial washer: (1)
- Commercial dryer: (1)

SWENSON GYMNASIUM MASTER PLAN

VENDING AREA

Architectural Requirements

Space Summary

- Space Type: Open vending area
- Area Required: As shown on plans
- Location: Main Level

Finishes

- Floor: Ceramic quarry tile
- Walls: Painted gypsum board w/ 4' wainscot
- Ceiling: Susp. 2x2 acoustical ceiling panels
- Sound: None required

Ceiling Height

- Above Finish Floor (min.): 9'-0"

Doors

- None required

Casework / Fixed Equipment

- None required.

Furnishings

- None required.

Technical Requirement

Mechanical

- Outdoor Air: 20 CFM / person (min.)
- Air Circulation: 20 CFM / person (min.)
- Summer Design Temp.: 75° F
- Winter Design Temp.: 72° F
- Controls: DDC individual controls
- Sound Criteria: 30 (NC/RC)
- Special Systems: None required
- Plumbing: Water line, floor sink

Electrical

- Power: One duplex outlet every 12' with at least one per wall (min.). Six outlets, each on separate electrical breaker for vending equipment.
- Data: Capacity for other uses of space in future.
- Phone: Capacity for other uses of space in future.
- Video: Capacity for future video and audio use.

Lighting

- Fixture Types: Fluorescent w/ electronic ballast
- Task Light: None required
- Foot Candles: 30
- VCP: 70
- Controls: Auto sensor

Equipment (NIC)

- Variety of vending machines: (6) +/-36"x30"x80"

CIRCULATION AREAS

Architectural Requirements

Space Summary
- Space Type: Open circulation, stairs, elevators
- Area Required: As shown on plans

Finishes
- Floor: Static-free carpet
- Walls: Painted gypsum board w/ chair rail and durable wainscot
- Ceiling: Susp. 2x2 acoustical ceiling panels
- Sound: As required

Ceiling Height
- Above Finish Floor (min.): 9'-0"

Doors
- As required.

Casework / Fixed Equipment
- None required.

Furnishings
- None required.

Technical Requirement

Mechanical
- Outdoor Air: 20 CFM / person (min.)
- Air Circulation: 20 CFM / person (min.)
- Summer Design Temp.: 75° F
- Winter Design Temp.: 72° F
- Controls: DDC individual controls
- Sound Criteria: None required
- Special Systems: None required
- Plumbing: Drinking fountains

Electrical
- Power: One duplex outlet every 12' with at least one per wall (min.). Outlets in stairwells floor cleaning. Power operated doors for disabled access.
- Data: Data at regular intervals for future use and laptop computers.
- Phone: Public phone banks.
- Video: None required

Lighting
- Fixture Types: Fluorescent w/ electronic ballast Display lighting
- Task Light: At lounge/reading areas Displays & directories
- Foot Candles: 30 /150
- VCP: 70
- Controls: Override in Administrative Suite

Equipment (NIC)
- None required.

SWENSON GYMNASIUM MASTER PLAN

CUSTODIAL ROOMS

Architectural Requirements

Space Summary

- Space Type: Enclosed storage
- Area Required: As shown on plans
- Locations: (1) Lower Level B
  (1) Lower Level A
  (2) Main Level

Finishes

- Floor: Sealed concrete
  Slope floor to floor drain
- Walls: Painted gypsum board
  w/ ceramic tile wainscot at mop sink
- Ceiling: Suspended painted gypsum board
- Sound: None required

Ceiling Height

- Above Finish Floor (min.): 8'-0"

Doors

- Type: Solid core wood w/ clear finish
- Frame: Painted hollow metal
- Special: None required

Casework / Fixed Equipment

- Mop & broom rack, wall mounted: (1)
- Dbl-prong aluminum coat hook: (3)
- Tack board: (1) 24"x48"

Furnishings

- 7-Shelf steel shelving unit: (1) 18"x48"
- Metal desk w/ double pedestal: (1) 30"x60"
- Task chair w/ arms, swivel, adjustable: (1) 27"x28"
- Waste can: (1) 14" diameter

Technical Requirement

Mechanical

- Outdoor Air: 20 CFM / person (min.)
- Exhaust: 10 air change (min.)
- Summer Design Temp.: 75° F
- Winter Design Temp.: 72° F
- Controls: DDC individual controls
- Plumbing: Mop sink, floor drain

Electrical

- Power: One duplex outlet every 12' with at least one per wall (min.).
- Data: Minimum one.
- Phone: Minimum one.
- Video: None required

Lighting

- Fixture Types: Fluorescent w/ electronic ballast
- Task Light: None required
- Foot Candles: 30
- Controls: Auto sensor

Equipment (NIC)

- None required

FAN ROOMS

Architectural Requirements

Space Summary
- Space Type: Enclosed
- Area Required: As shown on plans
- Locations: Balcony Level & Mechanical Mezzanine

Finishes
- Floor: Sealed concrete
- Walls: Painted gypsum board
- Ceiling: None required
- Sound: None required

Ceiling Height
- Above Finish Floor (min.): N/A

Doors
- Type: Solid core wood w/ clear finish
- Frame: Painted hollow metal
- Special: None required

Casework / FIxed Equipment
- None required

Furnishings
- None required

Technical Requirement

Mechanical
- Summer Design Temp.: Vent. for cooling to 80° F
- Winter Design Temp.: 65° F
- Controls: DDC individual controls
- Plumbing: None required

Electrical
- Power: One duplex outlet every 12' w/ at least one per wall (min.) Additional capacity for equipment listed.
- Data: Yes
- Phone: Yes
- Video: None required

Lighting
- Fixture Types: Fluorescent w/ electronic ballast
- Task Light: None required
- Foot Candles: 30
- Controls: Auto sensor

Equipment (NIC)
- None required

TELECOMMUNICATIONS ROOM

Architectural Requirements

Space Summary

- Space Type: Enclosed
- Area Required: As shown on plans
- Locations: (1) each level

Finishes

- Floor: Sealed concrete
- Walls: Painted gypsum board
- Ceiling: None required
- Sound: None required

Ceiling Height

- Above Finish Floor (min.): N/A

Doors

- Type: Solid core wood w/ clear finish
- Frame: Painted hollow metal
- Special: None required

Casework / Flxed Equipment

- None required

Furnishings

- None required

Technical Requirement

Mechanical

- Outdoor Air: Independent A/C
  24-hour cooling required
- Exhaust: 10 air change (min.)
- Summer Design Temp.: 75° F
- Winter Design Temp.: 72° F
- Controls: DDC individual controls
- Plumbing: None required

Electrical

- Power: One duplex outlet every 12'
  w/ at least one per wall (min.)
  Additional capacity for equipment listed.
- Conduit: Provide 6" conduit in floor and ceiling
- Data: Yes
- Phone: Yes
- Video: None required

Lighting

- Fixture Types: Fluorescent w/ electronic ballast
- Task Light: None required
- Foot Candles: 30
- Controls: Auto sensor

Equipment (NIC)

- None required

ELECTRICAL ROOM

Architectural Requirements

Space Summary
- Space Type: Enclosed
- Area Required: As shown on plans
- Locations: (1) each level

Finishes
- Floor: Sealed concrete
- Walls: Painted gypsum board
- Ceiling: None required
- Sound: None required

Ceiling Height
- Above Finish Floor (min.): N/A

Doors
- Type: Solid core wood w/ clear finish
- Frame: Painted hollow metal
- Special: None required

Casework / FIxed Equipment
- None required

Furnishings
- None required

Technical Requirement

Mechanical
- Summer Design Temp.: Vent. for cooling to 80° F
- Winter Design Temp.: 65° F
- Controls: DDC individual controls
- Plumbing: None required

Electrical
- Power: One duplex outlet every 12' w/ at least one per wall (min.) Additional capacity for equipment listed.
- Conduit: Provide 6" conduit in floor and ceiling
- Data: Yes
- Phone: Yes
- Video: None required

Lighting
- Fixture Types: Fluorescent w/ electronic ballast
- Task Light: None required
- Foot Candles: 30
- Controls: Auto sensor

Equipment (NIC)
- None required

CSI #	Description of Work	Qty.	Unit	$/Unit	Total
02	**Site Work**				
	Demolish bleachers at pool balcony	250	SF	$25.00	$6,250
	Remove existing windows	4,644	SF	$5.00	$23,220
	Remove existing curtain wall	2,366	SF	$6.00	$14,196
	Gut interior walls	86,000	SF	$8.00	$688,000
	SUBTOTAL				*$731,666*
03	**Concrete**				
	New support beams at racquetball court	120	LF	$600.00	$72,000
	Landing and stair at pool balcony exit	1	LS	$1,500.00	$1,500
	SUBTOTAL				*$73,500*
04	**Masonry**				
	Full height CMU (12')	2,500	SF	$9.00	$22,500
	Locker base	850	LF	$20.00	$17,000
	SUBTOTAL				*$39,500*
05	**Metals**				
	Susp. slab, deck, joists, beams racquetball court	3,200	SF	$32.00	$102,400
	Susp. slab, deck, joists, beams mech. mezzanine	6,000	SF	$25.00	$150,000
	Seismic ledger angle at double Tees	1,256	LF	$40.00	$50,240
	Connections at double Tees	1	LS	$70,000.00	$70,000
	New handrails at existing stairs	216	LF	$50.00	$10,800
	New guardrails at existing stairs	216	LF	$100.00	$21,600
	New stairs to mechanical mezzanine	2	EA	$10,000.00	$20,000
	New exterior rail at pool bleachers	12	LF	$100.00	$1,200
	Misc. Metals	1	LS	$20,000.00	$20,000
	SUBTOTAL				*$446,240*

SWENSON GYMNASIUM MASTER PLAN

CSI #	Description of Work	Qty.	Unit	$/Unit	Total
06	**Wood & plastics**				
	Misc. framing and blocking	1	LS	$10,000.00	$10,000
	Oak base	0	LF	$8.00	$0
	Oak chair rail	0	LF	$10.00	$0
	Base cabinets w/ solid surface counter tops	50	LF	$350.00	$17,500
	Base cabinets w/ p.lam. counter tops	91	LF	$250.00	$22,750
	Wall mounted cabinets	91	LF	$150.00	$13,650
	Instructor Stations w/ solid surface countertops	8	EA	$3,000.00	$24,000
	Taping tables	2	EA	$2,000.00	$4,000
	P.lam. shelving	80	LF	$200.00	$16,000
	Solid surface counter tops (restrooms)	77	LF	$150.00	$11,550
	Wood lockers	30	LF	$200.00	$6,000
	SUBTOTAL				*$125,450*
07	**Thermal & Moisture Protection**				
	Caulking & sealant	1	LS	$10,000.00	$10,000
	Roofing repairs at fresh air/relief air penthouses	1	LS	$20,000.00	$20,000
	SUBTOTAL				*$30,000*
08	**Doors & Windows**				
	3' x 8'-0" alum. storefront door/frame/hardware	14	EA	$1,200.00	$16,800
	Aluminum storefront system	4,644	SF	$30.00	$139,320
	Curtain wall system (pool)	2,366	SF	$35.00	$82,810
	Interior hollow metal glazing	200	SF	$25.00	$5,000
	Frame 3' x 7' hollow metal	0	EA	$125.00	$0
	Frame 3' x 7' galvanized hollow metal	5	EA	$135.00	$675
	Frame 3' x 7' hollow metal w/ sidelight	73	EA	$180.00	$13,140
	Frame 4' x 7' hollow metal	2	EA	$150.00	$300
	Frame 6' x 7' hollow metal	11	EA	$171.00	$1,881
	Rated solid core wood door 3' x 7'	60	EA	$235.00	$14,100
	Rated solid core wood door 4' x 7'	2	EA	$250.00	$500
	Non-rated solid core wood door 3' x 7'	38	EA	$225.00	$8,550
	Non-rated H.M. Galv. Door	1	EA	$265.00	$265
	Non-rated hardware	39	EA	$290.00	$11,310
	Rated hardware	62	EA	$395.00	$24,490
	Motorized counter doors	2	EA	$4,000.00	$8,000
	Door opener power assisted	5	EA	$2,000.00	$10,000
	SUBTOTAL				*$337,141*

CSI #	Description of Work	Qty.	Unit	$/Unit	Total
09	**Finishes**				
	Acoustic ceiling panel 2 x 4 & Grid	27,318	SF	$2.25	$61,466
	Acoustic ceiling panel 2 x 2 & Grid (corridors)	9,497	SF	$2.75	$26,117
	Acoustic ceiling panel 2 x 2 & Grid	3,620	SF	$2.75	$9,955
	EIFS ceiling	1,634	SF	$7.00	$11,438
	Sealed concrete	17,126	SF	$0.50	$8,563
	Rubber base	2,217	LF	$1.25	$2,771
	Carpet (state contract)	1,813	SY	$24.00	$43,512
	Carpet (antimicrobial)	458	SY	$26.00	$11,908
	Ceramic mosaic tile floor	4,153	SF	$9.00	$37,377
	Waterproof flooring at new fan rooms	7,000	SF	$4.50	$31,500
	VCT floor	916	SF	$2.50	$2,290
	Refinish dance floor	2,466	SF	$1.55	$3,822
	Refinish gym floor	15,700	SF	$1.55	$24,335
	Fix soft spots in gym floor	1	LS	$3,000.00	$3,000
	Ceramic tile wall (6 X 12)	0	SF	$8.00	$0
	Ceramic tile wall (4 X 4)	12,915	SF	$7.50	$96,863
	1.5" studs on concrete and CMU walls w/ gyp. bd	5,000	SF	$1.80	$9,000
	Metal stud partition with gyp. bd. both sides	28,000	SF	$3.75	$105,000
	Paint gyp. bd. walls, door frames 3 coats	80,000	SF	$0.50	$40,000
	SUBTOTAL				*$528,916*
10	**Specialties**				
	Toilet accessories (large)	6	EA	$3,000.00	$18,000
	Toilet accessories (small)	4	EA	$750.00	$3,000
	Lockers 12"x15"x72"	283	EA	$100.00	$28,300
	Lockers: Double tier 12"x15"x72"	1,132	EA	$60.00	$67,920
	Solid maple locker bench	850	LF	$20.00	$17,000
	Shower partitions (women only)	16	EA	$750.00	$12,000
	H.C. benches	6	EA	$700.00	$4,200
	Toilet Partitions (phenolic)	24	EA	$900.00	$21,600
	Toilet Partitions (baked enamel)	14	EA	$500.00	$7,000
	Fire Extinguisher with bracket	6	EA	$250.00	$1,500
	Fire Extinguisher and cabinet	12	EA	$325.00	$3,900
	SUBTOTAL				*$184,420*

SWENSON GYMNASIUM MASTER PLAN

CSI #	Description of Work	Qty.	Unit	$/Unit	Total
11	**Equipment**				
	Hydrotherapy pool	1	EA	$80,000.00	$80,000
	Projection Screens (powered)	1	EA	$5,000.00	$5,000
	SUBTOTAL				*$85,000*
15	**Mechanical Equipment**				
	Mechanical	96,000	SF	$24.00	$2,304,000
	SUBTOTAL				*$2,304,000*
16	**Electrical**				
	Electrical	96,000	SF	$13.00	$1,248,000
	SUBTOTAL				*$1,248,000*
	SUBTOTAL				***$6,133,833***
	General Conditions	5.0%			$306,692
	Bonds	1.0%			$61,338
	Overhead & Profit	5.0%			$306,692
	SUBTOTAL				***$674,722***
	TOTAL ESTIMATE OF CONSTRUCTION COSTS				***$6,808,555***
	Capitol Budget Estimate				$6,809,000

SEISMIC VULNERABILITY ASSESSMENT

WEBER STATE UNIVERSITY BUILDINGS

FOR

WEBER STATE UNIVERSITY

JUNE, 1991

REAVELEY ENGINEERS
& ASSOCIATES, INC.

R | E
& | A

Consulting Engineers

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SUMMARY

SEISMIC VULNERABILITY ASSESSMENT

WEBER STATE UNIVERSITY

I. INTRODUCTION

Recently there has been an increased awareness of the possibility of a severe earthquake occurring in Utah. The most likely area for this to happen is within the Intermountain Seismic Zone which parallels the Wasatch Front. In Utah the ground shaking influence of the Wasatch Fault extends approximately 50 miles east and west of the west face of the Wasatch Mountains and extends from Levan on the south to the Idaho border on the north. Beyond these approximate limits, the ground shaking although present, will be reduced in severity. Future seismic activity is not confined to this region and may occur throughout the state. Concerned individuals agree that the circumstances warrant investigation as to how structures not designed to current code standards will respond during an earthquake.

Buildings constructed under the current provisions of the Uniform Building Code require that all systems in the structure be constructed to resist a minimum level of seismic lateral force. Buildings constructed prior to the adoption and enforcement of modern earthquake requirements rarely have adequate seismic resistance to provide a minimum level of safety. Engineering evaluations can determine if an existing building is able to resist earthquake forces. These studies can determine whether a building is inherently earthquake resistant or vulnerable to seismic disturbances. A minimum level of life-safety seismic resistance is needed and this has previously been taken to mean that there is little chance of partial or complete structural collapse. In addition, parapets and exterior ornamentation elements need to be braced. A major seismic event may cause structural and non-structural damage to new construction as well as older non-conforming facilities..

The concept of upgrading existing buildings to resist seismic forces is relatively new in the State of Utah. As new building costs increase, it may become more cost effective to upgrade existing facilities. In deciding whether or not a building should be strengthened or retrofitted, the following should be considered.

a. Vulnerability of the specific building to seismic forces
b. Frequency and magnitude of expected seismic forces
c. The use and occupancy of the building

d. Overall remodel costs as compared to new construction
e. Disruptions in service during retrofitting procedures
f. Increased or existing life span of the building
g. Historic or sentimental value of the facility
h. Operating costs for heating and electrical equipment
i. Cleaning, maintenance, and operation costs
j. Other costs associated with the fire code, asbestos removal, or other improvements
k. Demographics of the population

All of these factors should be analyzed before remodel or retrofit dollars are spent.

II. STUDY METHODOLOGY

Each of the buildings in this study was considered individually. Since each of the buildings is composed of a number of different segments, each segment was evaluated. The evaluation procedure was as follows:

1. Study available drawings (in one case no drawings were available for review).

2. Site visits were made to all buildings to photograph the building, verify that building configuration issues had been noted, and observe building structures where no drawings were available.

3. The Applied Technology Council (ATC) rapid visual screening procedure was utilized. The methodology relies on the basic premise that each structure can be identified as fitting into one of 13 different structural categories. These categories were identified during previous ATC projects (ATC 13, 14) and are based on the primary lateral force resisting system and materials of the building. Appendix A contains a description of each model building type. The basic structural hazard score given for each structure type is based on the expected seismic resisting performance of the specific system. The basic structural hazard score is modified by adding or subtracting performance modification factors, which relate to significant seismic-related defects which have been observed for the structure.

4. Each building was given a structural score according to the ATC-21 methodology. This score was used as an indicator for the final seismic rating. Buildings were rated as **good**, **fair**, **poor**, or **very poor** on the basis of how they would respond to earthquake ground motion. This rating system was developed for a similar study for the University of California system. The methodology is directed toward achieving an acceptable level of earthquake safety with respect to protection against loss of life or personal injury. It is not based on whether a building complies with a specific seismic code, but on the anticipated seismic performance of a building during an earthquake and the resulting structural and non-structural damage jeopardizing life, and personal injury. It is important to note that under the methodology buildings are not rated "safe" or "unsafe." The use of judgmental and qualitative evaluations of good, fair, poor and very poor rather than "safe" or "unsafe" tells the decision-makers more and provides them with a broader basis to establish more definitive priorities for abating seismically hazardous buildings. The meaning of each rating is defined in Appendix A. The ratings of good, fair, poor or very poor, are somewhat subjective but are based upon the structural score coupled with our knowledge of the buildings and upon our best objective professional judgement.

One of the most important pieces of data that was used in this procedure is the age of the structure. The age is used to ascertain whether or not the structure was designed to modern code standards. Appendix A contains a listing of structure type with a benchmark date for the current code force level and provisions for the particular structure type. As can be seen, the early to mid 1970's marks the point in time which the basic current seismic force level was established. Prior to this time forces were approximately one-half of the current requirements. Every three years the Uniform Building Code is updated based upon the latest knowledge available. Table 3 lists each building by rating with the date of occupancy for each building. The average date of occupancy for each rating classification is then calculated. This shows clearly that as a general rule, the older buildings have lower seismic ratings.

III. SEISMICITY

There are three major elements related to seismicity that should be taken into account. They are: 1) strong ground shaking, 2) ground surface rupture and 3) liquefaction. Strong ground shaking is produced by large magnitude earthquake events in close proximity to the area of interest. Ground surface rupture is associated with ground surface displacements caused by differential movement of earth blocks along the fault during an earthquake event. Liquefaction is caused when saturated, cohesionless, fine granular soils (fine sands) are subjected to ground shaking of sufficient duration and intensity to cause pore pressures to build in the soil mass. When the pore pressures induced in the soil mass reach a certain level the soil loses its strength and behaves as a viscous liquid. The loss of the soil's strength can produce several types of failures including, but not limited to, flow failures, lateral spreading, loss of bearing capacity, and ground surface settlement. While liquefaction has often contributed to building damage, it has rarely caused structural collapse.

All buildings at Weber State University are located within "Seismic Zone 3" based on the Uniform Building Code (UBC) Seismicity Map. Although no significant activity has been recorded in the history of the Salt Lake Valley, the Wasatch Fault is considered to be active, since movement of the fault has occurred in the recent geologic past. Seismologists estimate that activity on the fault could produce an earthquake with magnitude of 7.5 (Richter Scale) or greater. An earthquake of this magnitude could produce relatively high ground shaking at the various sites on the order of 0.3g to 1.0g.

Based on the most recent mapping by the U. S. Geological Survey and the Weber County Geologist, some of the buildings are located within a fault rupture study area of the Wasatch Fault. Buildings included in this area are the Maintenance Building, Stores & Receiving Building, Stadium House, and Swenson Gymnasium. The Marriott Allied Health Building appears to be very close to the study area. Further geological study should be done to determine the potential threat due to faulting at these buildings.

Seismic design was first included in the 1958 U.B.C. as an appendix item. Since that time the code prescribed force levels have undergone some dramatic increases. In addition to basic force level increases, the Wasatch Front has been changed from seismic zone 2 to the present seismic zone 3, further increasing seismic force levels. Recently the Utah State Geologist has recommended that the Wasatch Front be changed to Seismic

zone 4 (see appendix A for a copy of this recommendation). Zone 4 forces are one third or 33% greater than zone 3 forces for the same building. A historic perspective of seismic design force changes is also included in Appendix A and outlines the changes in seismic design forces over time.

As these seismic zone changes and other code changes have been made, there is a lag time before architects and engineers are able to implement these changes in their designs. Even if a building is designed or renovated to meet all of the current code requirements, it is likely that a decade from now it will not conform to all of the applicable requirements that may be in force at that time. With this in mind, it is easy to understand why so many older buildings are not adequate when evaluated using current seismic code standards.

IV. SUMMARY OF FINDINGS

A summary of the results of the survey is listed in Table 1 and 2. These tables contain the name and number of each building as well as other key data and the seismic rating.

The data of Table 1 indicates that there are a significant number of buildings at the University that will require further in depth analysis to better determine the hazard that they represent, and to suggest alternatives to abate the problem. The rapid seismic evaluation is not meant to be, nor has it been represented as, a definitive classification of an individual structure's seismic resistance. Rather it is a general indication of expected seismic performance. There is a fine line in trying to distinguish some of the Poor and Very Poor buildings. There is a greater distinction between the other categories in most cases.

Before funds are spent to remodel any building, or part thereof, a more detailed analysis should be performed to determine actual seismic demands and actual resisting capacities. With this information, programmatic retrofit schemes can be devised and retrofit costs estimated. Seismic retrofit is always more economical when it is part of an overall building renovation. With a detailed seismic retrofit scheme and associated cost in hand, an informed decision can be made regarding seismic upgrading of a facility. Once the decision to seismically upgrade a facility has been made, a set of contract documents can be produced for the upgrade of the structure.

There are a number of buildings that have been rated as "poor" or "very poor" for which an estimated cost for seismic retrofit has been listed in Table 1. These estimated seismic retrofit costs are

preliminary only and could change as further study is done and more information becomes available. The costs are based on detailed studies of other buildings and, therefore, are rough approximations of what a detailed analysis would produce. The estimated seismic retrofit costs are for a basic life-safety seismic retrofit only. The estimated seismic retrofit would reduce the potential for total or partial collapse and provide an increased level of life safety for occupants of the various buildings. The estimated retrofit is not to the level where all hazard of injury or damage to the structure would be eliminated. Any seismic retrofit will need to be tailored to the individual buildings to reinforce the seismically vulnerable areas of the building.

The costs have been estimated using average cost per square foot figures for the various building types. A 30% cost increase has been added for disruption and repair of architectural components and finishes by the work of the seismic retrofit. A 10% general contingency and 15% contractor profit and overhead have also been included in the estimated seismic retrofit costs. These estimates do not include costs for upgrade of structural gravity load carrying systems, architectural components and finishes, mechanical systems, electrical systems, fire protection systems, asbestos abatement or any items other than the basic life-safety seismic retrofit. Where upgrade in areas other than basic life safety seismic retrofit are required or desired, costs for these improvements should be added to the estimated seismic retrofit costs. Cost estimates for items other than basic seismic retrofit are beyond the scope of this report.

This phased approach to seismic retrofit provides a rational method for identifying and solving the seismic safety problem.

As an aid to the decision making process on which campus buildings should be given the highest priority for further study, a ranking system has been devised for the building rated as **Poor** or **Very Poor**. We have ranked the buildings rated Poor or Very Poor considering the estimated number of occupants, number of hours per day the building is occupied, number of stories in the building, the importance of the building to the campus, and the seismic performance rating. Information on the number of occupants, hours occupied per day, and importance to campus has been supplied by Mr. Bob Folsom, Director of Campus Architectural Services.

Each category relating to a building's priority for additional seismic investigation has been assigned a scale of 1-10, 10 indicating the highest priority. In addition each category has been assigned a weighted importance factor between 1 and 5

which is a multiplier for the basic category score. A scoring breakdown of each category follows:

NUMBER OF OCCUPANTS

The number of occupants for each building has been taken from information supplied by Mr. Bob Folsom.

NUMBER OF OCCUPANTS	SCORE
0-10	1
11-50	2
51-100	3
101-300	4
301-500	5
501-750	6
751-1000	7
1001-1500	8
1501-3000	9
3001+	10

NUMBER OF HOURS OCCUPIED PER DAY

HOURS OCCUP./DAY	SCORE
up to 8	4
up to 16	7
up to 24	10

NUMBER OF STORIES

NO. OF STORIES	SCORE
1	1
2	3
3	5
4	7
5	9
6+	10

IMPORTANCE TO CAMPUS

IMPORTANCE	SCORE
SOMEWHAT IMPORTANT	3
IMPORTANT	5
VERY IMPORTANT	7
ESSENTIAL	10

SEISMIC PERFORMANCE RATING

RATING	SCORE
POOR	5
VERY POOR	10

WEIGHTED IMPORTANCE FACTORS

CATEGORY	IMP. FACTOR
NO. OCCUPANTS	4
HRS. OCCUPIED/DAY	3
NO. STORIES	2
IMPORTANCE TO CAMPUS	5
SEISMIC PERFORMANCE RATING	2

Using these categories and the scoring breakdowns noted above, we have assigned a priority score to each building which is shown in Table 4. Based on this score a sorted prioritized list has been produced in Table 5 with the building receiving the highest score receiving the highest priority for additional study. Future remodel, repair, or reroof projects scheduled for individual buildings may warrant a higher priority be assigned to those buildings due to the economy realized by combining the remodel, repair, or reroof projects with seismic upgrade efforts. The estimated retrofit costs shown in Table 1 could possibly be reduced significantly if the seismic upgrade is combined with other work.

If the priority ranking system or an individual building ranking can be modified in any way to better serve the planning needs of the campus, please notify us and we can make any changes desired.

This evaluation is limited in scope. We have studied the available drawings and in some instances made site visits to the buildings where drawings were not available. The basic assumption has been made that actual construction of the buildings is as shown on the drawings. It is possible that actual construction and/or the structural properties of various building materials is different from that shown on the drawings. Field verification of the drawings is beyond the scope of this study and in many cases can be very difficult to accomplish. Therefore, any conclusions or recommendations included in this report are based upon professional opinion and the information available on the drawings rather than actual verified conditions.

There may be conditions in the buildings that are different from the drawings that could cause the actual response of the building to an earthquake to be different than the seismic rating given in this report.

The given seismic rating is not meant to be a definitive classification of seismic response, but a general rating of seismic response based on professional judgement from information

available within the limited scope. This report is not intended to cover mechanical, electrical, architectural or other systems and components not specifically noted.

TABLE 1

SEISMIC HAZARD EVALUATION
WEBER STATE UNIVERSITY

BLDG. NO.	NAME	YEAR OCCP.	NO. STORIES	G.S.F.	TYPE	RATING	ESTIMATED SEISMIC RETROFIT COSTS
6	SCIENCE LAB BLDG.	1969	6	121,720	C2/RM	FAIR	-
7	LIND LECTURE HALL	1969	3	48,200	C2/RM	FAIR/POOR	$65,000
10	MILLER ADMIN. BLDG.	1970	3	45,147	C2	FAIR	-
14	SOCIAL SCIENCE BLDG.	1972	3+BSMT	106,327	PC2/C2	VERY POOR	$2,420,000
15	WATTIS BUSINESS BLDG.	1983	2	52,269	S2/RM/S1	FAIR	-
16	EDUCATION BLDG.	1973	3+BSMT	67,229	C2/PC2	POOR	$1,310,000
18	HEATING PLANT	1952	1	6,206	C3	POOR	$150,000
20	CAMPUS SERVICES BLDG.	1958	1	16,080	S5	VERY POOR	$325,000
22	TECHNICAL ED. BLDG.						
	ORIGINAL BLDG.	1957	2	77,976	PC2	VERY POOR	$1,900,000
	DIESEL SHOP ADDITION	1979	1	10,000	RM	POOR	$65,000
23	ENGINEERING TECH. BLDG.	1977	2	72,910	RM	FAIR	-
26	MAINTENANCE BLDG.	1974	2	25,721	RM	POOR	$125,000
27	STORES & RECEIVING BLDG.	1982	1	11,537	RM	FAIR	-
34	MARRIOTT HEALTH SCI.	1987	4	61,198	C2	GOOD	-
35	HEALTH/PHYS. ED. BLDG.	1990	1	78,236	RM	GOOD	-
36	SHEPHERD UNION BLDG.						
	PHASE 1	1961	3	57,000	S5/C2	POOR	$1,110,000
	PHASE 2	1970	3	98,128	S5/RM	POOR	$1,595,000
37	STEWART LIBRARY			159,276			$3,105,000
	PHASE 1	1965	2+BSMT	-	C3/C2	POOR*	
	PHASE 2	1975	2+BSMT	-	C3/C2	POOR*	
38	BROWNING CENTER	'64/'66	2 TO 4	128,993	S5/PC1	POOR	$2,725,000
39	COLLETT ART BLDG.	1966	2	18,361	S5/RM	POOR	$300,000
50	SWENSON GYM	1962	2	85,000	C2	POOR	$1,655,000
52	STADIUM HOUSE	1953	2	22,958	PC2	POOR	$560,000
70	WASATCH HALL	1964	3	48,427	RM/PC2	POOR	$945,000
72	STANSBURY HALL	1964	4	21,770	RM/PC2	POOR	$425,000
74	LASAL HALL	1964	4	21,770	RM/PC2	POOR	$425,000
76	PROMONTORY TOWER	1968	11	123,039	C2/C1	POOR	$2,400,000
100	DEE EVENTS CENTER	1977	1 TO 2	149,035	C2	GOOD	-
TOTALS				**1,734,514**			**$21,605,000**

(G.S.F = GROSS SQUARE FOOTAGE)

* SEE BUILDING DATA SHEETS

TABLE 2

SUMMARY OF SQUARE FOOTAGE BY RATING (SQUARE FEET)
WEBER STATE UNIVERSITY BUILDINGS

GOOD	FAIR	POOR	VERY POOR		TOTAL
288,469 [16.6%]	343,583 [19.8%]	902,079 [52.0%]	200,383 [11.6%]		1,734,514 [100%]

TABLE 3 - SEISMIC HAZARD EVALUATION - WEBER STATE UNIVERSITY
LIST OF BUILDINGS BY SEISMIC RATING WITH DATE OCCUPIED

GOOD		FAIR		POOR		VERY POOR	
NAME	DATE OCCUP	NAME	DATE OCCUP	NAME	DATE OCCUP	NAME	DATE OCCUP
MARRIOTT HEALTH SCI. BLDG.	1982	SCIENCE LAB BLDG.	1969	LIND LECTURE HALL	1969	SOCIAL SCIENCE BLDG.	1972
HEALTH & PHYS. ED. BLDG.	1990	LIND LECTURE HALL	1969	EDUCATION BLDG.	1973	CAMPUS SERVICES BLDG.	1958
DEE EVENTS CENTER	1977	MILLER ADMIN. BLDG.	1970	HEATING PLANT	1952	TECHNICAL ED. BLDG.	1957
		WATTIS BUSINESS BLDG.	1983	TECH. ED. DIESEL SHOP	1979		
		ENGINEERING TECH. BLDG.	1977	MAINTENANCE BLDG.	1974		
		STORES & RECEIVING BLDG.	1979	SHEPHERD UNION-PHASE 1	1961		
				SHEPHERD UNION-PHASE 2	1970		
				STEWART LIBRARY-PHASE 1	1965		
				STEWART LIBRARY-PHASE 2	1975		
				BROWNING CENTER-PHASE 1	1964		
				BROWNING CENTER-PHASE 2	1966		
				COLLETT ART BLDG.	1966		
				SWENSON GYM	1962		
				STADIUM HOUSE	1953		
				WASATCH HALL	1964		
				LASAL HALL	1964		
				STANSBURY HALL	1964		
				PROMONTORY TOWER	1968		
AVERAGE YEAR OCCUPIED	1983	AVERAGE YEAR OCCUPIED	1975	AVERAGE YEAR OCCUPIED	1966	AVERAGE YEAR OCCUPIED	1962

TABLE 4

WEBER STATE UNIVERSITY
BUILDING SEISMIC EVALUATION

PRIORITY SCORE OF CAMPUS STRUCTURES WITH POOR & VERY POOR SEISMIC PERFORMANCE RATINGS

Building Name	Bld'g No.	Occupant Load (Importance Fac. - 4)			Hours Occupied (Importance Fac. - 3)			Bldg. Ht. - (Stories) (Importance Fac. - 2)			Campus Importance (Importance Fac. - 5)			Seismic Perf. Rating (Importance Fac. - 2)			TOTAL (Weighted)
		No.	Base	Wt'd	No.	Base	Wt'd	No.	Base	Wt'd	Imp.*	Base	Wt'd	Rate**	Base	Wt'd	
LIND LECTURE	7	900	7	28	15	7	21	3	5	10	B	7	35	P	5	10	104
SOCIAL SCIENCE	14	2030	9	36	15	7	21	3	5	10	B	7	35	V.P.	10	20	122
EDUCATION	16	1020	8	32	15	7	21	3	5	10	B	7	35	P	5	10	108
HEATING PLANT	18	5	1	4	24	10	30	1	1	2	A	10	50	P	5	10	96
CAMPUS SERV.	20	10	1	4	8	4	12	1	1	2	C	5	25	V.P.	10	20	63
TECH. ED. BLDG.	22	720	6	24	15	7	21	2	3	6	B	7	35	V.P.	10	20	106
MAINTENANCE	26	15	2	8	8	4	12	2	3	6	C	5	25	P	5	10	61
UNION - PHASE 1	36	630	6	24	12	7	21	3	5	10	C	5	25	P	5	10	90
UNION - PHASE 2	36	570	6	24	12	7	21	3	5	10	C	5	25	P	5	10	90
LIBRARY - PH. 1	37	600	6	24	12	7	21	2	3	6	B	7	35	P	5	10	96
LIBRARY - PH. 2	37	740	6	24	12	7	21	2	3	6	B	7	35	P	5	10	96
BROWNING CENT.	38	1250	8	32	15	7	21	2 TO 4	5	10	B	7	35	P	5	10	108
ART BLDG.	39	210	4	16	15	7	21	2	3	6	B	7	35	P	5	10	88
SWENSON GYM	50	575	6	24	15	7	21	2	3	6	C	5	25	P	5	10	86
STADIUM HOUSE	52	60	3	12	8	4	12	2	3	6	C	5	25	P	5	10	65
WASATCH HALL	70	230	4	16	15	7	21	3	5	10	C	5	25	P	5	10	82
STANSBURY H.	72	75	3	12	15	7	21	4	7	14	C	5	25	P	5	10	82
LASAL HALL	74	75	3	12	15	7	21	4	7	14	C	5	25	P	5	10	82
PROMONTORY T.	76	520	6	24	24	10	30	11	10	20	B	7	35	P	5	10	119

*** IMPORTANCE**

A	Essential
B	Very Important
C	Important
D	Somewhat Important

**** SEISMIC PERFORMANCE RATING**

P	Poor
V.P.	Very Poor

TABLE 5

WEBER STATE UNIVERSITY
BUILDING SEISMIC EVALUATION

PRIORITY SCORE OF CAMPUS STRUCTURES WITH POOR & VERY POOR SEISMIC PERFORMANCE RATINGS
(SORTED ACCORDING TO TOTAL PRIORITY SCORE)

Building Name	Bld'g No.	Occupant Load (Importance Fac. - 4)			Hours Occupied (Importance Fac. - 3)			Bldg. Ht. - (Stories) (Importance Fac. - 2)			Campus Importance (Importance Fac. - 5)			Seismic Perf. Rating (Importance Fac. - 2)			TOTAL (Weighted)
		No.	Base	Wt'd	No.	Base	Wt'd	No.	Base	Wt'd	Imp.*	Base	Wt'd	Rate**	Base	Wt'd	
SOCIAL SCIENCE	14	2030	9	36	15	7	21	3	5	10	B	7	35	V.P.	10	20	122
PROMONTORY T.	76	520	6	24	24	10	30	11	10	20	B	7	35	P	5	10	119
EDUCATION	16	1020	8	32	15	7	21	3	5	10	B	7	35	P	5	10	108
BROWNING CENT.	38	1250	8	32	15	7	21	2 TO 4	5	10	B	7	35	P	5	10	108
TECH. ED. BLDG.	22	720	6	24	15	7	21	2	3	6	B	7	35	V.P.	10	20	106
LIND LECTURE	7	900	7	28	15	7	21	3	5	10	B	7	35	P	5	10	104
HEATING PLANT	18	5	1	4	24	10	30	1	1	2	A	10	50	P	5	10	96
LIBRARY - PH. 1	37	600	6	24	12	7	21	2	3	6	B	7	35	P	5	10	96
LIBRARY - PH. 2	37	740	6	24	12	7	21	2	3	6	B	7	35	P	5	10	96
UNION - PHASE 1	36	630	6	24	12	7	21	3	5	10	C	5	25	P	5	10	90
UNION - PHASE 2	36	570	6	24	12	7	21	3	5	10	C	5	25	P	5	10	90
ART BLDG.	39	210	4	16	15	7	21	2	3	6	B	7	35	P	5	10	88
SWENSON GYM	50	575	6	24	15	7	21	2	3	6	C	5	25	P	5	10	86
WASATCH HALL	70	230	4	16	15	7	21	3	5	10	C	5	25	P	5	10	82
STANSBURY H.	72	75	3	12	15	7	21	4	7	14	C	5	25	P	5	10	82
LASAL HALL	74	75	3	12	15	7	21	4	7	14	C	5	25	P	5	10	82
STADIUM HOUSE	52	60	3	12	8	4	12	2	3	6	C	5	25	P	5	10	65
CAMPUS SERV.	20	10	1	4	8	4	12	1	1	2	C	5	25	V.P.	10	20	63
MAINTENANCE	26	15	2	8	8	4	12	2	3	6	C	5	25	P	5	10	61

*** IMPORTANCE**

A Essential
B Very Important
C Important
D Somewhat Important

**** SEISMIC PERFORMANCE RATING**

P Poor
V.P. Very Poor

APPENDIX A

SEISMIC PERFORMANCE RATINGS

UBC SEISMIC FORCE LEVEL SUMMARY

LETTER FROM UTAH STATE GEOLOGIST

BUILDING TYPE BENCHMARK YEARS

MODEL BUILDING TYPE DESCRIPTIONS AND PERFORMANCE CHARACTERISTICS

MEANING OF GOOD, FAIR, POOR, OR VERY POOR SEISMIC PERFORMANCE RATINGS(1)

GOOD Seismic performance rating would apply to buildings and other structures whose performance during a major seismic disturbance* is anticipated to result in some structural and/or nonstructural damage and/or falling hazards that would not significantly jeopardize life. Buildings and other structures with GOOD rating would have a level of seismic resistance such that funds need not be spent to improve their seismic resistance to gain greater life safety and would represent an acceptable level of earthquake safety.

FAIR seismic performance rating would apply to buildings and other structures whose performance during a major seismic disturbance* is anticipated to result in structural and nonstructural damage and/or falling hazards that would represent low life hazards. Buildings and other structures with a FAIR seismic performance rating would be given a low priority for expenditures to improve their seismic resistance and/or to reduce falling hazards so that the building could be reclassified GOOD.

POOR seismic performance rating would apply to buildings and other structures whose performance during a major seismic disturbance* is anticipated to result in significant structural and nonstructural damage and/or falling hazards** that would represent appreciable life hazards. Such buildings or structures either would be given a high priority for expenditures to improve their seismic resistance and/or to reduce falling hazards** so that the building could be reclassified GOOD, or would be considered for other abatement programs such as reduction of occupancy.

VERY POOR seismic performance rating would apply to buildings and other structures whose performance during a major seismic disturbance* is anticipated to result in extensive structural and nonstructural damage, potential structural collapse, and/or falling hazards** that would represent high life hazards. Such buildings or structures either would be given the highest priority for expenditures to improve their seismic resistance and/or to reduce falling hazards** so that the building could be reclassified GOOD or would be considered for other abatement programs, such as reduction of occupancy.

*Major seismic disturbance is defined for the purposes of these Seismic Performance Ratings as an earthquake at the site which would be given a Modified Mercalli Intensity Scale (as modified by Charles F. Richter in 1958) rating of at least IX based on the description of the structural effects.

** Falling hazards are elements such as unbraced and/or unreinforced parapets, cast concrete statuary and ornamentations, unbraced equipment rack or shelving, etc.

(1) Taken from University of California Policy - Seismic Safety

UNIFORM BUILDING CODE SEISMIC FORCE COEFFICIENTS IN UTAH FOR VARIOUS TIME PERIODS DURING LAST 23 YEARS

1958 UBC (1)	F = CW	= 0.025 W

Seismic Design was first required. Utah was placed in Seismic Zone 2

1961 UBC (2)	F = ZKCW	= 0.067 W

Utah was still classified as a Seismic Zone 2

1970 UBC	F = ZKCW	= 0.133 W

Utah was placed in Seismic Zone 3

1976 & 1979 UBC	F = ZIKCSW	= 0.14 W

Utah is still classified as Seismic Zone 3

NOTE: The Uniform Building Code required design lateral seismic force has increased significantly from 1958 to present

1961 compared to 1958	--	268% increase
1970 compared to 1958	--	532% increase
1976 compared to 1958	--	560% increase
1976 compared to 1961	--	209% increase

*ZONE 0 - No Damage

ZONE 1 - Minor damage; distant earthquakes may cause damage to structures with fundamental period greater than 1.0 second; corresponds to intensities V and VI of the M.M. scale.

ZONE 2 - Moderate damage; corresponds to intensity VII of the M.M. scale.

ZONE 3 - Major damage; corresponds to intensity VIII and higher of the M.M. scale.

ZONE 4 - Those areas within Zone No. 3 determined by the proximity to certain major fault systems.

*Modified Mercalli intensity scale of 1931

(1) Seismic requirements were placed in the Appendix. Appendix was not adopted locally.

(2) Seismic requirements were generally not enforced at this time.

State of Utah
DEPARTMENT OF NATURAL RESOURCES
UTAH GEOLOGICAL AND MINERAL SURVEY

Norman H. Bangerter
Governor
Dee C. Hansen
Executive Director
M. Lee Allison
State Geologist

606 Black Hawk Way
Salt Lake City, Utah 84108-1280
801-581-6831

November 6, 1990

George P. Weiler
Construction Trades Bureau Manager
160 E. 300 S./PO Box 45802
Salt Lake City, UT 84145-0802

Dear Mr. Weiler:

This is to formally advise the Uniform Building Code Commission that the Utah Geological and Mineral Survey has thoroughly reviewed the available geologic and seismologic information regarding the issue of upgrading from a seismic zone 3 to zone 4 along part of the Wasatch Front. Susan Olig of my staff presented this information and its implications at the request of the Commission at their meeting on June 21, 1990. Enclosed are handouts from that presentation. Subsequently, we have worked closely with the Structural Advisory Committee to further discuss and evaluate the technical information.

As a state agency charged with evaluating geologic hazards to protect public safety and welfare, we believe it is important to report our findings to the Commission. We have concluded that the latest ground motion data, when combined with the criteria used to initially develop the 1988 UBC seismic zone map, strongly indicates that a zone 4 is warranted along the central portion of the Wasatch Front (roughly from Nephi to Brigham City; see p. 5 of the enclosed handouts). We realize that there are other significant factors to consider in making a change to a zone 4, and fully support the Commission's decision to submit an amendment to ICBO for final resolution of the issue.

We will be pleased to provide any further technical support and assistance that the Commission may need in addressing this and other issues to reasonably reduce the risk all Utahns face from earthquake ground shaking.

Best regards,

M. Lee Allison, Director

MLA/sw

cc: Alicia L. Timm, Uniform Building Code Coordinator
Leslie A. Stoker, President Uniform Building Code Commssion
Carl R. Eriksson, Structural Advisory Committee Chairman
Ken Karren, Structural Advisory Committee Liaison

COMPARING PROBABILISTIC GROUND ACCELERATIONS AND SEISMIC ZONES ALONG THE WASATCH FRONT

OLIG, S. S., Utah Geological and Mineral Survey, Salt Lake City, UT 84108

Earthquake-resistant design requirements in the 1988 Uniform Building Code (UBC) depend to a large degree on seismic zones. Comparison of probabilistic accelerations with criteria used by the Structural Engineers Association of California (SEAOC) to initially determine the 1988 zones reveals important implications for the central Wasatch Front. Youngs and others (1987) estimated peak horizontal ground accelerations on rock (PGA) with a 10% probability of being exceeded in 50 years of greater than 0.3 g for much of the central Wasatch Front (roughly from Nephi to Brigham City), and values of 0.4 g and greater for the Salt Lake City-Ogden area. These estimates are much higher than estimates made by Algermissen and others (1982;1990) of 0.2 to 0.29 g for the same areas. Both of the studies estimate much higher PGAs at lower probability levels. PGAs with a 2% probability of being exceeded in 50 years calculated from results of Youngs and others range from 0.6 to 0.8 g for the central Wasatch Front.

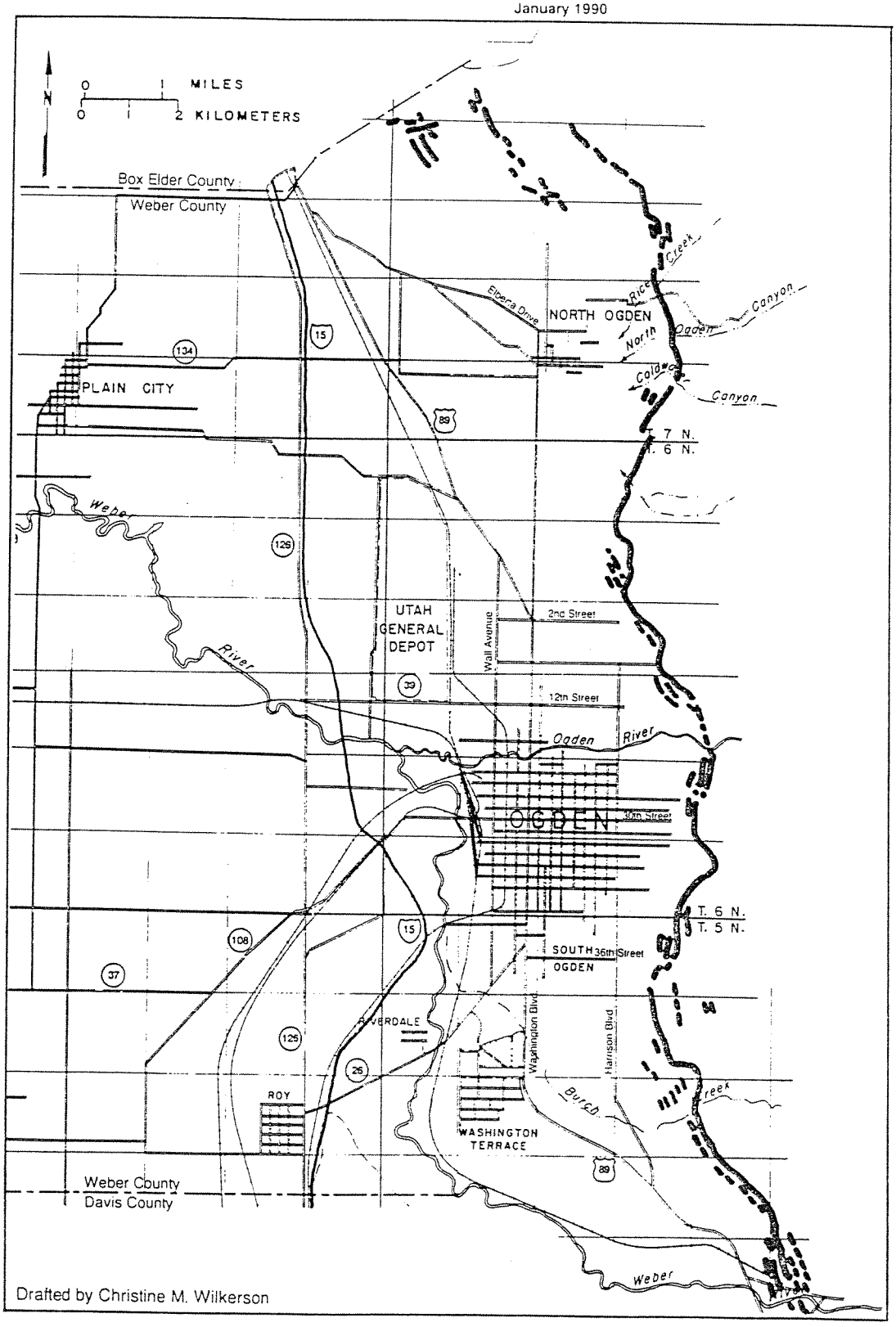
Comparison of the two studies reveals that attenuation relations, minimum and maximum magnitudes, fault segmentation models, or models of earthquake occurrence are not responsible for the higher estimates of Youngs and others. The use of paleoseismic data by Youngs and others to characterize the recurrence of large (surface-faulting) earthquakes is in part responsible for their higher PGA estimates. Youngs and others estimate an average recurrence interval for a M_s=7.0 and greater event on the Wasatch fault zone of 330 years, whereas Algermissen and others used an average recurrence interval of about 720 years based on extrapolating historical data, an interval of roughly twice that indicated by paleoseismic data. Differences in defining earthquake sources and incorporating uncertainty in the analyses also probably contributed to the larger PGA estimates of Youngs and others, but specific contributions are difficult to ascertain.

Combining the results from Youngs and others with the SEAOC criteria for determining seismic zones (based on accelerations with a 10% probability of being exceeded in 50 years) indicates that the central Wasatch Front would fall into seismic zone 4, as opposed to its present designation as zone 3. Recent workshops suggest changes for ground-motion parameters in future building codes. Whatever parameters are used in the future, this comparison demonstrates the importance of adequately incorporating paleoseismic data into the analyses and giving due consideration to appropriate probability levels in the criteria, particularly in areas where large earthquakes have relatively long recurrence intervals, such as in Utah.

EARTHQUAKE FAULT MAP OF A PORTION OF WEBER COUNTY, UTAH

UGMS Public Information Series 1

January 1990



Known trace of fault with evidence of Holocene (about 10,000 years ago to present) movement.

(Dashed where existence is uncertain or inferred.)

This map for general reference only. Detailed maps are available at the Weber County Planning Office.

Location of faults compiled from preliminary drafts of surficial geologic mapping by A.R. Nelson and S.F. Personius, U.S. Geological Survey, 1989, and S.F. Personius, U.S. Geological Survey Map MF-2402, 1988.

UTAH GEOLOGICAL AND MINERAL SURVEY

M. Lee Allison, Director

606 Black Hawk Way

Salt Lake City, Utah 84108-1280

The Utah Geological and Mineral Survey is a division within the Department of Natural Resources, Dee Hansen, Executive Director.

BENCHMARK YEARS FOR VARIOUS STRUCTURAL SYSTEMS

STRUCTURAL TYPE		BENCHMARK YEAR
W	Wood Frame	1970
S1	Steel Moment Resisting Frame	1976
S2	Steel Braced Frame	1988
S3	Light Metal Frame	---
S4	Steel Frame with Concrete Shear Wall	1976
C1	Concrete Moment Resisting Frame	1976
C2	Concrete Shear Wall	1976
C3/S5	Steel or Concrete Frame W/Masonry Infill	1973
PC2	Precast Frame	---
RM	Reinforced Masonry	1976
URM	Unreinforced masonry	---

MODEL BUILDINGS

I. WOOD BUILDINGS

- A. Wood Frame Dwellings (W1)
- B. Commercial or Industrial Wood Structures (W2)

II. STEEL BUILDINGS

- A. Steel Moment Resisting Frame Buildings (S1)
- B. Braced Steel Frame Buildings (S2)
- C. Light Moment Frame Buildings with Longitudinal Tension Bracing only (S3)
- D. Steel Frame Buildings with Cast-in-Place Concrete Shear Walls (S4)
- E. Steel Frame Buildings with Infilled Walls of Unreinforced Masonry (S5)

III. CAST-IN-PLACE REINFORCED CONCRETE BUILDINGS

- A. Reinforced Concrete Moment Resisting Frame Buildings (C1)
- B. Shear Wall Buildings (C2)
- C. Concrete Frame Buildings with Infilled Walls of Unreinforced Masonry (C3)

IV. BUILDINGS WITH PRECAST CONCRETE ELEMENTS

- A. Tilt-Up Buildings with Precast Bearing Wall Panels (PC1)
- B. Buildings with Precast Concrete Frames and Concrete Shear Walls (PC2)

V. REINFORCED MASONRY BUILDINGS

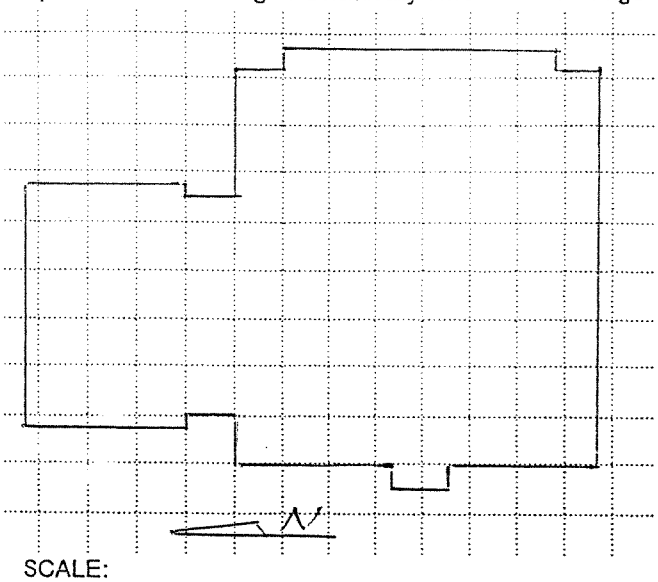
- A. Reinforced Masonry Bearing Wall - Wood or Metal Deck Diaphragm Buildings (RM1)
- B. Reinforced Masonry Bearing Wall - Precast Concrete Diaphragm Buildings (RM2)

VI. UNREINFORCED MASONRY BUILDINGS

- A. Unreinforced Masonry Bearing Wall Buildings with Wood, Steel or Concrete Floors and Roofs (URM)

ATC-21/ (NEHRP Map Areas 5,6,7 High)

Rapid Visual Screening of Seismically Hazardous Buildings



SCALE:

NUMBER 50

NAME REED K. SWENSON GYM.

ADDRESS OGDEN, UT. ZIP 84408

USE Gym YEAR OCCUPIED 1962

NO. STORIES 2 U.B.C. YEAR 1958

TOTAL FLOOR AREA (sq. ft.) 85,000

INSPECTOR G.B. DATE 6/6/91

SEISMIC RATING:

- GOOD ☐
- FAIR ☐
- POOR ☒
- VERY POOR ☐

COMMENTS:

PHOTO

OCCUPANCY

Residential
Commercial
Office
Industrial
(Pub. Assem.)
(School)
Govt. Bldg.
Emer. Serv.
Historic Bldg.

No. Persons
0-10
11-100
(100+)

Non Structural Falling Hazard ☐

DATA CONFIDENCE

* = Estimated, Subjective, or Unreliable Data

DNK = Do Not Know

STRUCTURAL SCORES AND MODIFIERS

BUILDING TYPE	W	S1 (MRF)	S2 (BR)	S3 (LM)	S4 (RC SW)	C1 (MRF)	(C2) (SW)	C3/S5 (URM INF)	PC1 (TU)	PC2	RM	URM
Basic Score	**4.5**	**4.5**	**3.0**	**5.5**	**3.5**	**2.0**	**3.0**	**1.5**	**2.0**	**1.5**	**3.0**	**1.0**
High Rise	N/A	-2.0	-1.0	N/A	-1.0	-1.0	-1.0	-0.5	N/A	-0.5	-1.0	-0.5
Poor Condition	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
Vert. Irregularity	-0.5	-0.5	-0.5	-0.5	-0.5	-1.0	(-0.5)	-0.5	-1.0	-1.0	-0.5	-0.5
Soft Story	-1.0	-2.5	-2.0	-1.0	-2.0	-2.0	-2.0	-1.0	-1.0	-2.0	-2.0	-1.0
Torsion	-1.0	-2.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Plan Irregularity	-1.0	-0.5	-0.5	-0.5	-0.5	-0.5	(-0.5)	-0.5	-1.0	-1.0	-1.0	-1.0
Pounding	N/A	-0.5	-0.5	N/A	-0.5	-0.5	N/A	N/A	N/A	-0.5	N/A	N/A
Large Heavy Cladding	N/A	-2.0	N/A	N/A	N/A	-1.0	N/A	N/A	N/A	-1.0	N/A	N/A
Short Columns	N/A	N/A	N/A	N/A	N/A	-1.0	-1.0	-1.0	N/A	-1.0	N/A	N/A
Post Benchmark Year	+2.0	+2.0	+2.0	+2.0	+2.0	+2.0	+2.0	N/A	+2.0	+2.0	+2.0	N/A
SL2	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	(-0.3)	-0.3	-0.3	-0.3	-0.3	-0.3
SL3	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6
SL3 & 8 to 20 stories	N/A	-0.8	-0.8	N/A	-0.8	-0.8	-0.8	-0.8	N/A	-0.8	-0.8	-0.8

FINAL SCORE 1.7

COMMENTS

Detailed Evaluation Required?
(YES) NO

ATC6/74
30032.01

REAVELEY ENGINEERS & ASSOCIATES, INC.
BUILDING EVALUATION DATA SHEET

BUILDING: REED K. SWENSON GYM ADDRESS: OGDEN, UT.

OWNER: WEBER STATE UNIV.

BUILDING USE: Gymnasium ESTIMATED NO. OF OCCUPANTS:

APPROXIMATE AREA: 85,000 SF BUILDNG HEIGHT: 35 BASEMENT (Y) N

NUMBER OF STORIES: 2 STORY HEIGHTS: Varies CRAWL SPACE Y (N)

U.B.C. YEAR: 1958 BUILDING TYPE: C2

STRUCTURAL FRAMING:

FOUNDATIONS / SOILS: Reinf. conc. fdn walls on reinf. conc footings

COLUMNS: Load bearing conc walls

* FLOORS: Precast Ts & panels plus reinf. cast-in-place conc

WALLS: Main bearing walls reinf. conc., some interior walls URM

ROOFS: Precast Ts (Low Roof) 3x6 T&G on Tapered Steel girders (Upper)

LATERAL SYSTEM: Reinf. conc. shear walls

STRUCTURAL MODIFICATIONS:

ADJACENT STRUCTURES / POUNDING:

* 2" conc. topping

LACK OF:	YES	NO
WALL ANCHORAGE	☐	☑
DIAPHRAGM CAPABILITY	☐	☑
DIAPHRAGM SHEAR TRANSFER	☐	☑
VERTICAL IRREGULARITY	☑	☐
PLAN IRREGULARITY	☑	☐
TORSION	☐	☑
SOFT STORY	☐	☑
SHORT COLUMNS	☐	☑

Note,

1. Drgs dated 6/20/60
2. Brick veneer attached to concrete walls with "Tie-To" anchoring system.
3. Interior CMU walls did not show any reinforcing, so the assumption is they are unreinforced.
4. Precast Ts connected at the stems only

REVIEWING ENGINEER: JB

INTRODUCTION

The Reed K. Swensen Gymnasium was evaluated as part of a 1991 seismic vulnerability assessment of Weber State University buildings. This study, completed by Reaveley Engineers & Associates, assigned the building a seismic performance rating of "POOR" and estimated retrofit costs to be $1,655,000. The evaluation was very limited in scope and was only intended to identify those buildings that are potentially vulnerable to seismic forces, and assign order of magnitude costs to potential upgrades. The 1991 report is included in an appendix, the evaluation process is described in greater detail within the text of the report.

At this time, no additional analysis or evaluation has been performed. No in-depth seismic evaluation has been completed on the building. All assessments of potential deficiencies and possible upgrade measures are based entirely on experience in upgrading similar buildings and on engineering judgement. We would advise that a detailed analysis be completed and specific deficiencies be identified prior to the expendature of any retrofit dollars.

BUILDIGN DESCRIPTION

The Reed K Swenson Gymnasium is approximately 85,000 square foot building that was completed in 1962. The construction documents are dated June, 1960. This means that the building would have been designed under the requirements of the 1958 Uniform Building Code. At that time Utah was designated as seismic zone 2. The seismic design requirementw were very minimal at that time. The seismic requirements were actually part of the Appendix to the code, which was not adopted locally.

The building is supported on reinforced concrete spread footings. The building has a basement level which is concrete slab on grade. The main floor areas of the building are constructed of precast concrete double T's with a 2" thick concrete topping. The double T's are supported by reinforced concrete walls, beams and columns. There is a balcony level that is also formed using precast concrete double T's. The bleachers at the balcony area consist of precast seating sections supported by cast-in-place concrete beams. The low roof structure on the west side of the building is also of precast concrete double T construction with no topping slab indicated. The high roof portions of the building are constructed of tapered steel long span girders supporting a wood 3x6 tongue and groove decking. There are a number of CMU walls within the building that appear to be unreinforced.

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DEFICIENCIES

The following items appear to be seismic deficiencies. It should be noted again that no formal calculations have been generated as part of this assessment. A detailed analytical evaluation may determine additional deficiencies that have not been noted.

1. Lack of diaphragm shear capacity at high wood roofs.
2. Lack of shear transfer load path from roof deck to concrete walls at east and west sides of high roof over gym.
3. Lack of load path from roof deck to concrete walls at east and west sides of the natatorium due to clerestory windows.
4. Lack of lateral resistance at north side of natatorium. The entire north wall is glass with no apparent frames, braces, shear walls, etc.
5. Lack of shear transfer load path at precast double T support points. The only connection at the typical double T support as at the base of the stem. This connection provides no path for transferring horizontal shear from the double T flange into the supporting shear wall.
6. Lack of shear transfer between adjacent double T's. The typical flange connection between adjacent double T's consists of a flat plate embeded in the edge of each flange with a section of rebar placed between and welded to each embed. This type of connection is generally very brittle due to welding of reinforcing steel, and has performed poorly in major seismic events.
7. Lack of load path from roof deck to concrete walls at west elevation (classroom/office area) due to clerestory windows.
8. Presence of unreinforced CMU partitions. Thesewalls pose a significant falling hazard when subjected to out of plane loading.
9. Lack of lateral resistance on all sides of the mezzanine level lobby on the east side of the building. This lobby is glass or clerestory window on all sides.

POTENTIAL UPGRADE MEASURES

The following are potential upgrade measures for the deficiencies listed above.

1. Provide a ply wood overlay nailed to the T&G decking below.
2. Provide steel X bridging between steel girders to transfer diaphragm shear from the roof deck to the concrete wall.
3. Provide steel braced frames or concrete infill panels at the clerestory windows.
4. Provide new steel braced frame or concrete shear walls along this side of the building.
5. Provide a new steel angle connection between the flange of the dou.ble T and the concrete wall.
6. Provide fiberglass or carbon fiber reinforcing at the flange to flange connections.
7. Provide steel braced frames or concrete infill panels at the clerestory windows.
8. Remove all unreinforced masonry from the building.
9. Provide new steel braced frames or concrete shear walls on all sides of the lobby.

BASIS OF DESIGN

All new construction should conform to the requirements of the International Building Code. We recommend that the design of any seismic upgrade work be performed in accordance with FEMA 356 "*Prestandard and Commentary for the Seismic Rehabilitation of Buildings*".

Any seismic remediation work should be made based on the results of a comprehensive analytical evaluation of the building's lateral force resisting system. Without this type of evaluation as the basis of any upgrade, remedial measures may be incorporated, which improve the performance, but fall short of meeting the full requirements at any given location.

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